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JOURNAL

60
YEARS OF
PUBLICATION

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

60 No. 7
JULY/JUILLET
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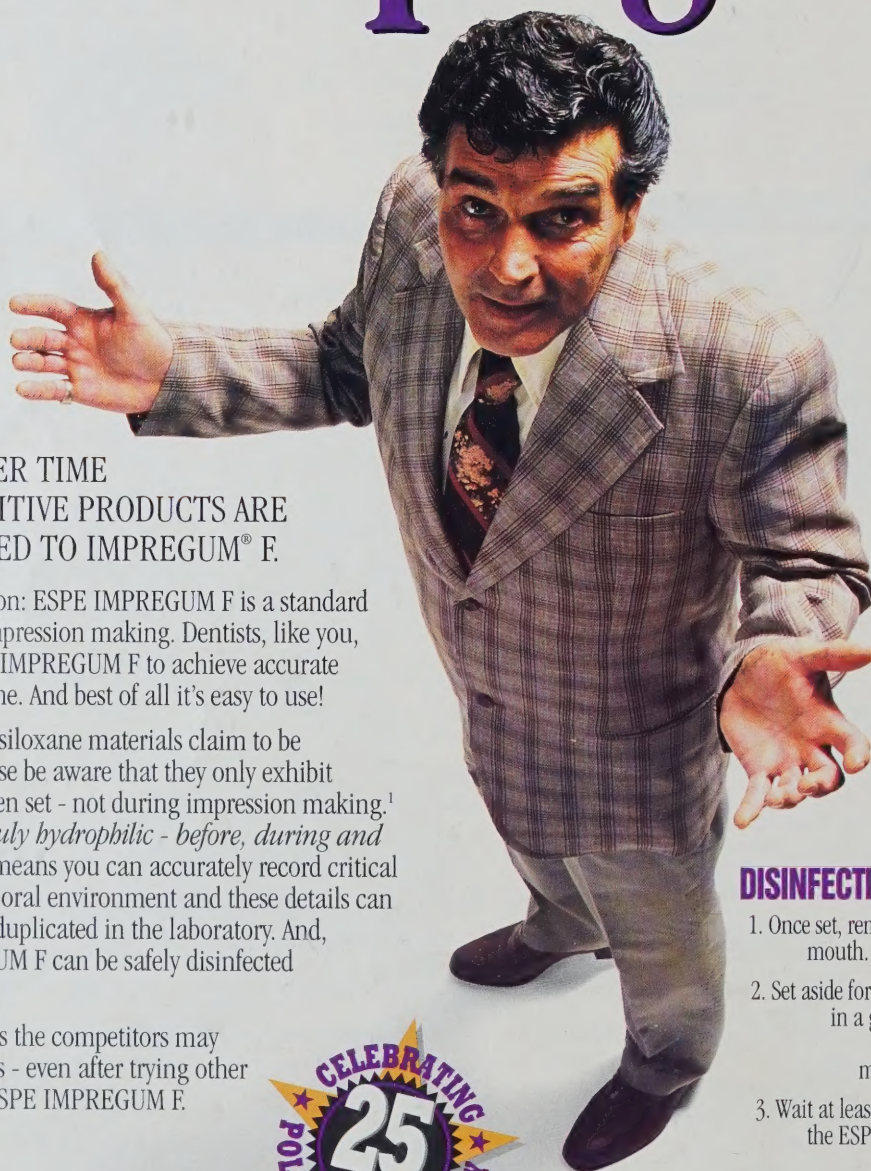
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July/
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1994
Vol. 60
No. 7

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1. Clin., Dent., Vol. 4. C 36.

2. Dimensional Stability of Elastomeric Impressions After Long Term Disinfection, C. Habib, C. Smith, G. Kugel, A. Aboushala (Tufts University School of Dental Medicine, Boston, MA USA)
To be presented at 1994 IADR.

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CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

JULY/JUILLET 1994
VOL. 60, NO. 7

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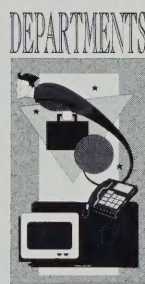
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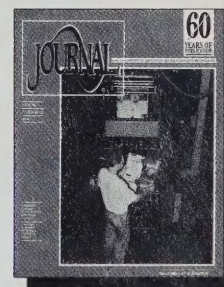
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Cover: Anatomy of a Journal
(Photograph by Teal Photography).

CDA members, look for your next issue of *Communiqué* in September.

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ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

October 2-8, 1994

Joint CDA/FDI Annual Dental Meeting

Vancouver, B. C.
(613) 523-1770
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August/Août 1994

August 18-20: Bone Augmentation and Tissue Guidance, two-day implant seminar presented jointly by the Vancouver Implant Seminar (Study Club) and the Canadian Society of Oral Implantology in Vancouver, B.C. For information, contact: Vic, Barry or Linda at (604) 298-4232.

August 18-20: Atlantic Provinces AGD Annual Convention in Brudenell, P.E.I. Speakers: Robin Wright (Interoffice Communications) and Dr. Michael Horsman (Pharmacology Update). For information, contact: Dr. Richard Holden at (902) 566-5133 or Dr. Jack Thompson at (506) 847-4243.

August 24-28: The Canadian Academy of Endodontics — 30th Annual Meeting in Kananaskis, Alberta. For information contact: Dr. K. Fuhrman, Suite 260, Bankers Hall, 315-8th Avenue S.W., Calgary, Alberta T2P 4K1. Tel.: (403) 263-1343.

September/Septembre 1994

September 8-11: 12th Congress of the International Association of Dentistry for the Handicapped to be held in Trier Germany. For more information contact Dr. Wolfgang Jakobs, Bahnhofstrasse 63-65, 5522 Speicher, Germany. Tel.: 6562 2244 or Fax: 6562 1430.

September 8-13: 32nd Iranian Annual Dental Association Congress and 12th International Dental Exhibition in Teheran, Iran. For information, contact: A.H. Arfaei, Iranian Dental Association, P.O. Box 14155 - 3695 IR - Teheran, Iran.

September 14-18: 17th Biennial Conference of the New Zealand Dental Association in Christchurch, New Zealand. For information, contact: N.Z.D.A. Biennial Conference Committee, P.O. Box 1183, Christchurch, New Zealand.

September 19: Latex Allergy Symposium to be held at the Metro Toronto Convention Centre in Toronto, Ontario. Cosponsored by the Health Protection Branch's Latex Allergy Task Force, the Canadian Society of Allergy and Clinical Immunology, the Medical Devices Bureau, Health Canada and Ansell Medical. For information call Penny Dodge at (613) 730-6233 or fax (613) 730-8252.

September 22-24: Canadian Academy of Restorative Dentistry and Prosthodontics and The Association of Prosthodontists of Canada — Joint Scientific Meeting to be held at the Banff Springs Hotel, Banff, Alberta. For information contact: Dr. Edward W. McIntyre, 164 Meadowlark Shopping Centre, Edmonton, Alberta T5R 5W9. Tel.: (403) 484-1336 or Fax: (403) 489-4930.

September 24-25: 11th International Oral Implant Symposium in Bali, Indonesia. For more information call: (65) 734 3162.

September 29-October 2: World Congress of Osseointegration to be held in Venice Italy and sponsored by the University of Roma "La Sapienza" and University of Padova. For more information contact: Prof. G. Dolci or Prof. G.A. Favero, Congress Secretariat, "Giornale di Stomatologia e Ortognatodonzia," P. le Europa 1, 31046 Oderzo (TB), Italy. Tel: (422) 815000 or Fax: (422) 717949.

October/Octobre 1994

October 2-4: Joint Workshop Meeting of the Canadian Association of Dental Consultants and The Canadian Society of Public Health Dentists to be held at Le Meridien Hotel in Vancouver, B.C.

For more information contact Dr. Euan Swan, Director Dental Treatment Services 3 (DDTS3) DGDS, 100 Metcalf Street, Ottawa, Ontario, K1A 0K2.

October 7: Canadian Academy of Pediatric Dentistry in Vancouver, B.C. For information contact: Dr. Ian Bennett, Executive Director, Canadian Academy of Pediatric Dentistry, 4095 Puget Drive, Vancouver, B.C. V6L 2V3. Tel.: (604) 733-7976 or Fax: (604) 733-7996.

October 13-15: The 38th Canadian Dental Association Teaching Conference will be held in Toronto, on the topic of Dental Clinical Epidemiology and Decision Making. For further information, please contact Ms. Gay MacQuarrie at (613) 523-1770, ext. 209.

October 14-15: The Icelandic Dental Association's Annual Meeting and Dental Show to be held at the Hotel Loftliedir in Reykjavik, Iceland. For more information contact: S. Dagbjartsdóttir, Box 8596, 128 Reykjavik, Iceland. Tel: (354) 1 34646 or Fax: (351) 1 33562.

October 21-22: Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ontario. For more information contact: Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

October 22-26: 135th Annual Session of the American Dental Association to be held in New Orleans, Louisiana. For information contact: Council on ADA Sessions and International Relations, American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611. Tel: (312) 440 2658 or Fax: (312) 440-2707.

October 24-28: Turkish Society of Restorative Dentistry's 2nd International Congress in Istanbul, Turkey. The main topic is "Lasers in dentistry" (Simultaneous interpretation between English and Turkish will be provided). For information, contact: Mete Üçok, University of Istanbul, Faculty of dentistry, 34390 Capa, Istanbul, Turkey.

October 31-November 5: Joint Meeting of the Canadian Society of Forensic Science & Northwest Association of Forensic Scientists at the Waterfront Hotel in Vancouver, B.C. For information, contact: Jeffrey Caughlin, R.C.M.P. Forensic Laboratory, 5201 Heather Street, Vancouver, B.C. V5Z 3L7. Tel.: (604) 264-3507 Fax: (604) 264-3499.

November/Novembre 1994

November 3-5: The Croatian Dental Society and the School of Dentistry, University of Zagreb, are organizing the 1st World's Congress of Croatian Dentists, which is to be held in Zagreb. For information contact: AS - Kongresni Servis, Las-tovska 23, 41 000 Zagreb, Croatia. Tel.: 385 41 624 100, 624 101 or Fax: 385 41 624 424.

November 3-5: The American College of Prosthodontics — Annual Session at the Hyatt Regency Hotel, New Orleans, Louisiana. For information, contact: The American College of Prosthodontists, tel.: (210) 829-7236.

November 17-19: Odontologisk Riksstämman/Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

November 22-25: Congrès de l'Association Dentaire Française in Paris, France. For information, contact: Dr. Alain Deyrolle, 92 Avenue de Wagram, 75017, Paris, Tel.: (33) 1 42 27 89 00.

November 22-25: XIIIth International Dental Film and Video Festival in Paris, France. For information, contact: Dr. Maurice Dolovici, Secrétaire Général, Association Dentaire Française, 92 avenue de Wagram, F-75017 Paris, France.

December 25-January 1: Alpha Omega International Dental Fraternity's Annual Convention to be held at the Marriott Eaton Centre Hotel in Toronto, Ontario. For

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Thunder Bay Dental Association

October 22: Oral Pathology —
Dr. Dick Elzay

For information contact:
Dr. William E. Turner
Tel: (807) 623-9445

University of Toronto

October 20-21: The Current Treatment and Management of T.M. Disorders.

This program is developed by Dr. George Zarb, professor and head of the prosthodontic department, faculty of dentistry, University of Toronto.

November 24-26: Nitrous Oxide in Dental Practice.

This 17-hour course introduces the dentist, and indeed the entire health-care team, to the concept of conscious sedation for the effective and efficient practice of dentistry.

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Gorden J. Christensen, DDS, MSD, PhD

Restorative Dentistry: Cements and Cementation — Traditional and New — PM

Gorden J. Christensen, DDS, MSD, PhD

Artistic Interpretations in Porcelain

Lloyd L. Miller, DMD

Direct Composite Resin: A Viable Restorative for the Posterior Dentition

John A. Kanca III, DDS

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Carl E. Misch, DDS

Achievable Excellence in Creative Restorations

Harold M. Shavell, DDS

Solving Tooth Color Problems in Esthetic Dentistry

Ronald E. Goldstein, DDS

Esthetics and the Porcelain Laminate Veneer

David A. Garber, DDS

Predictable and Biologic Cosmetics in Anterior Crowning

Richard D. Wilson, DDS

New Techniques in Cosmetic Dentistry

John A. Kanca III, DDS

Removable Prosthodontics

The (Un)Happy Complete Denture Patient

Glen P. McGivney, DDS

Bar Overdenture Concepts in Edentulous Implant Prosthodontics

Charles E. English, DDS

Osseointegration

Implant Dentistry Live!

Hans Peter Weber, DMD

Surgical Implantology

Joseph E. Canzona, MD, DD

Surgical Placement of Osseointegrated Implants

Mollie A. Winston, DDS

Treating the Implant Patient: Consultation to Completion

Leonard B. Shulman, DMD
and Gary S. Rogoff, DDS

Periodontics

The Use of Barrier Membranes For Promoting Bone Formation Around Implants Placed Into Immediate Extraction Sockets

William Becker, DDS, MSD

Periodontal Surgery: From Resection to Regeneration

Raymond A. Yukna, DDS

Advances in Periodontal Surgery

Edward F. Sugarman, DDS and

Richard A. Sugarman, DDS

Scaling and Root Planning: A Comparison of Hand and Ultrasonic Techniques

Herbert I. Bader, DDS

Guided Tissue Regeneration II

William Becker, DDS

The Semilunar Coronally Positioned Flap for Esthetics

Dennis P. Tarnow, DDS

New Horizons and Practice Implications in Periodontal Diseases

William J. Killoy, DDS, Tom M. Limoli, DDS, Michael Newman, DDS and Robyn Wright

Periodontal Plastic Surgery: Soft Tissue Grafting for Root Coverage

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TM Disorders and Medical Emergencies

Screening for TM Disorders and the Fabrication of a Chair-Side Occlusal Appliance

Jeffrey P. Okeson, DDS

Medical Emergencies in the Dental Office

Dean W. Darby, DDS, PhD
and Stanley F. Malamed, DDS

For information contact:

Karen Lacis

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Tel: (604) 822-2627

information contact: Sheila Guston, Executive Director, 347 Fifth AVE., #703 New York, NY 10016. Tel: (212) 683-4155 or Fax: (212) 683-0027.

1995

February 15-19: The Jamaica Dental Association's 31st National Convention will be held at the Jamaica Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Florida.

For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Florida 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia.

For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No. 1, Darlinghurst NSW 2010. Tel: 02 331 6920 or Fax: 02 331 7296.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland.

For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieäisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

March 18-22: Australian Dental Association, 28th Australian Dental Congress in Hobart, Tasmania.

For information contact: 28th Australian Dental Congress, C/O Mures Convention Management, Victoria Dock, Hobart, Tasmania, 7000. Tel: (002) 31 2121 or Fax: (002) 34 4464.

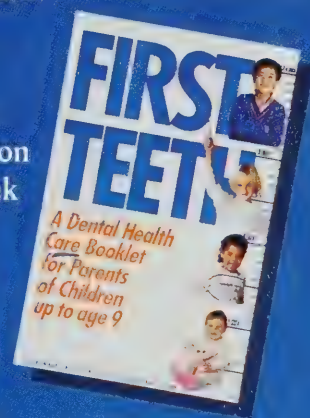
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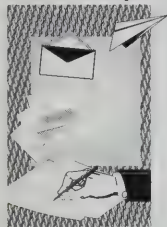
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LETTERS



Geriatric Dentistry

I would like to congratulate you for publishing an issue of the *Journal* (Vol. 60, No. 5) entirely dedicated to geriatric dentistry, a subject which is important in our opinion. You are surely aware of the interest we have in this subject, since you published a photo of myself and a large group of Quebec dentists who received a certificate in geriatric dentistry (from me) two years ago. These dentists had completed a rather long course in geriatric dentistry offered by the continuing education program of the faculty of dentistry, McGill University. This course for dentists was given in both French and English in 1992, and was repeated in English in 1994. In addition, in 1993 we presented another course for hygienists, dental assistants and health care workers specifically dedicated to the treatment and care of geriatric patients.

Our most recent course was given by a group of specialists in geriatric care who were for the most part Quebecers, but we did have a professor from Ontario as one of our speakers. Of the 14 participants, three were from Ontario and the rest were Quebec dentists. They received their certificates during Les Journées Dentaires on May 30.

In 1992, the Quebec Association for Special Care Dentistry was founded. This group meets four times per year to hear lecturers speak on topics of particular interest to dentists who treat handicapped and geriatric patients requiring special care. A bulletin is also published four times per year by the association, which contains articles specifically of interest to those who are con-

cerned with this special population. There are over 30 members of this association and new members are constantly being recruited from our graduating classes as well as those who have taken our specialized courses.

I would hope that the next time the *Journal* dedicates a special issue to geriatric dentistry that you will advise the undersigned or my successor at McGill University ahead of time, so that we can ask members of the Quebec Association for Special Care Dentistry to prepare articles that would be of interest to your readers. There is a large active group in Quebec dedicated to geriatric dentistry, and we are concerned that they were not represented in the recent May issue of the *Journal*.

Ralph Y. Barolet, B.Sc., B.Eng.,
DDS, MSD
McGill University

Mercury Toxicity: Outdated Facts!

I received the March 1994 edition of the *CDA Journal* (Vol. 60, No. 3) two weeks after receiving the March 1994 edition of *Bio-Probe*, the official newsletter of the International Academy of Oral Medicine and Toxicology.

In the former publication, CDA's president down plays the mercury toxicity issue, quoting 1992 Swedish medical research conclusions that "mercury amalgam is safe..."

In *Bio-Probe*, I read that on February 18, 1994, the Swedish government announced a total ban of amalgam for children in 1995 and for adults in 1997. "Amalgam is, from a toxicological point of view, an unacceptable filling material..." declares the Swedish government. "Patients have suffered unnecessarily and we will now rectify our mistakes."

This ban is not "only for environmental reasons" as CDA's president, in all due respect, has been informed: it is now for health reasons.

CDA's credibility is at stake when it declares that mercury amalgam is safe. "Absence of evidence is not evidence of absence." Amalgam

toxicity is a medical issue, not a dental issue.

Instead of condemning political requests for more research, CDA should wisely support all medical research to, once and for all, prove or disprove the safety of this material. The health of our patients depends on it.

In the meantime, with the increasing number of studies showing possible amalgam toxicity, I prefer to abstain from using it. What's good for the Swedes must be good for Canadians.

For better health,
Pierre Larose, DDS
St-Laurent, PQ

Mercury Toxicity

I am writing to respond to Dr. Pierre Larose's letter (above), which comments on the statements made by CDA president Dr. Raymond Wenn in his column ("Just the Facts, Please"), published in the March 1994 issue of the *Journal*. The president did not down play the mercury toxicity issue, on the contrary he merely referred to the responsible scientific pronouncements of the Swedish Medical Research Council (MRC). These views of the Swedish MRC echo the views of the responsible worldwide medical and dental scientific community. This may not represent the views of the *Bio-Probe* newsletter referred to by Dr. Larose, but they do form the consensus of world scientific opinion, based on the most reliable validated scientific evidence that is available to us in 1994. The CDA president quite rightly was dismayed to see that an elected government official would pay attention to media sensationalism, as depicted in *Saturday Night* magazine. As stated in the past,¹ "It is not unreasonable to expect academic scientists to be morally responsible for their research. Politicians make decisions based on public opinion and the availability of finances." The official Swedish government recommendation (and it is only a recommendation, not a decision) referred to by Dr. Larose is, in fact, based on conclusions that were related entirely to the effects of mer-

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cury pollution in the environment.

CDA's credibility and even the Swedish MRC's credibility are not at stake, since they are based squarely on the responsible scientific evidence that currently supports the view that amalgam is a safe and effective material. Dr. Larose is quite correct in stating that it is not a dental issue — it is not even a medical issue, but a scientific issue.

It is a well known fact that the average dentist is exposed, during their clinical use of amalgam, to much higher levels of mercury vapor than the average patient. In spite of this, Osborn² has reviewed 18 references, all of which support the conclusion that no evidence is available to show that the health of dentists and dental personnel is adversely affected by working in close contact with mercury.

It is not clear where the "increasing number" of scientific studies, which Dr. Larose claims show "possible amalgam toxicity" (presumably this is meant to be mercury toxicity?) have been published. The February edition of the *Bio-Probe* newsletter, a copy of which Dr. Larose forwarded to the CDA *Journal*, stated: "... vast amount of recent scientific research casting grave doubts on the safety of amalgam as a dental material." It is indeed puzzling to know where all of this vast amount of scientific research, to which *Bio-Probe* refers, has been published.

Certainly, this evidence was not available in August 1991, when the NIH Technology Assessment Conference "Effects and Side-Effects of Dental Restorative Materials,"³ reviewed in-depth the issue of dental amalgam and other restorative materials. Or indeed in 1992, when the Swedish MRC conference did the same.⁴ The Swedish MRC conclusion was: "Available data do not justify discontinuing the use of mercury-containing dental amalgam fillings or recommending their replacement." The Swedish MRC further stated that: "Although mercury is known to be a weak allergen and allergic reactions may occur, no evidence exists of systemic toxic effects from mercury released from dental amalgam." Similar conclusions were reached by scientists who have no vested interest in the

continuation or discontinuation of dental amalgam as a dental restorative filling material. These scientists were dedicated to reviewing scientifically validated data and reaching conclusions based on the published findings. As far as is known, none of the eminent scientists at these two scientific conferences made any reference to *Bio-Probe* or indeed to *Saturday Night* magazine.

It is interesting that those who claim to be so concerned about the use of amalgam do not raise any concerns about the very real problem of mercury in our garbage dumps from household batteries, or the mercury that is available to the general public in some forms of food. The scientifically validated measurements of Burglund⁵ can be used to show that the mercury vapor levels given off from amalgams in the mouth over a 24-hour period are only about one per cent of the time-weighted average mercury vapor allowed in the workplace by the World Health Organization's (WHO) threshold limit value (TLV).

Sad to say, Dr. Larose must accept that research will never be able to prove the absolute safety of dental amalgam or indeed the alternative materials that Dr. Larose currently uses for his patients. We cannot guarantee absolute biological safety for many of the substances used in the majority of our dental materials. In science, absolute proof does not exist. We only have a working hypothesis that offers the best explanation of a series of observations. We can only support this hypothesis so long as rigorous tests have repeatedly failed to prove it false. The hypothesis stating that dental amalgam, composite and all other dental restorative materials do not present a health hazard to patients represents our temporary knowledge base, which is our working hypothesis.

Derek Jones, B.Sc., PhD, FRSC (U.K.), FADM
Dalhousie University

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3. NIH Technology Assessment Conference. National Institute of Dental Research, Bethesda, Maryland, August 26-28, 1991.

4. Swedish Medical Research Council. Potential Biological Consequences of Mercury Released from Amalgam. A state of the Art Document Report, 1992.

5. Berglund, A. Estimation by 24-hour Study of the Daily Dose of Intra-Oral Mercury Vapour Inhaled After Release from Dental Amalgam. *J Dent Res* 69:1646-1651, 1991.

Note: The editor maintains the right to edit letters for space and clarity. Letters submitted for publication in the *Journal* must include the full name and address of the author, and must be signed. Photocopies will not be accepted.

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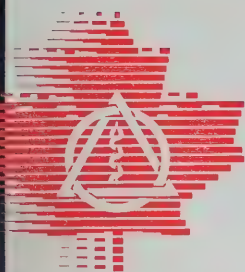
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EDITORIAL

THE JOURNAL — A DELICATE BALANCE



Dr. P. Ralph Crawford,
Editor

Like the vast majority of our readers, you probably have little or no concept of how the *Journal* issue you've got in your hands was put together, or of the delicate balancing act that CDA's editors go through each and every month. Hence the theme for this issue of the magazine is the "Anatomy of a Journal" (with all due credit to some forgotten editor who first coined the phrase years ago.)

Publishing a monthly scientific *Journal* is no haphazard experience. Rather, it is one that requires careful planning, an attention to detail, and the support of the population it serves.

The *Journal of the Canadian Dental Association* is now in its 60th year of publication. Today, much as it was 60 years ago, the *Journal's* mission is to be: "the authoritative written voice of the Canadian Dental Association, providing dialogue between the national association and the dental community, dedicated to publishing worthy, scientific and clinical articles, and informing dentists of issues significant to the profession."

Similarly, the *Journal's* foremost responsibility is still the publication of dental information that will benefit both dentists and their patients. This requires us to maintain a delicate balance between the needs and

desires of the various interest groups with a stake in the magazine, including CDA members — who "own" the *Journal* — the authors who submit articles, advertisers and the public.

In 1994, general practise dentists account for 90 per cent of the *Journal's* readership. The remainder come from the more than 1,700 dental specialists, the approximately 900 full- and part-time academics who staff Canada's 10 dental faculties, and the 1,000 or so retired dentists who wish to maintain a link to their profession.

The *Journal's* delicate balance is often determined by the "needs/wants" principle. As every teacher knows, imparting knowledge is never a simple task. People tend to be more comfortable hearing the familiar things that they want to hear, not the more complex ideas that they really need to hear. Frankly, it would be much easier for the *Journal's* editorial staff to publish nothing but clinical "how to" articles. But that would ignore the more complex scientific and sociological research that will ultimately determine dentistry's future. Isn't it our responsibility to ensure that concerned readers have access to this kind of information through the best available peer-reviewed articles?

Still, this is only the tip of our juggling act. The delicate balance we've established also incorporates editorials, book reviews, opinion pieces, letters and obituaries, to name a few. Ours is the only Canadian journal that manages to juggle all these elements, each and every month, and deliver them to more than 17,000 dentists from coast to coast.

It's not always easy. For example, dozens of books come to us from publishing houses. While we believe it is important to inform readers on the latest available dental texts, it's impossible to review them all. We have to decide which books merit a review, based on their potential interest to our readers.

Even obituaries are part of the *Journal's* balancing act. How do you delicately explain to a distraught reader that the *Journal* only

publishes lengthy eulogies when they concern a dentist who made a significant contribution to CDA or the profession, and that his or her heart-felt obituary cannot be accepted.

Or how do we explain to an eminent researcher — despite the strength of his personal convictions — that publishing his opinion piece in the *Journal* could lead to a costly libel suit that would not be in the best interests of the magazine, CDA or the profession.

Advertising can't be excluded from the balancing act, either. There are guidelines for good taste and fair play, and generally there are few problems. The majority of advertisers are responsible business people who sell quality products. But sometimes they throw us a curve that makes our juggling act a little hard to sustain — or afford. In the past year alone, the *Journal* lost three advertising accounts, worth many thousands of dollars, because we would not compromise scientific truth for dollars, and published articles that these advertisers viewed as being unfavorable.

Even news items must be balanced. Not every dental meeting or social event is of national interest. However, there is a historical responsibility to report as many dental happenings as possible. Perhaps 50 or 100 years from now, the *Journal* may provide the only written account of an event that changed the course of dentistry.

In turn, it would be naive to ignore the fact that the media peruses professional journals for articles of public interest — and controversy. On more than one occasion the *Journal* has been quoted in the media on topics such as infection control, dental fraud, fluoride and mercury.

The balancing act inherent in providing relevant information to groups with various interests is a delicate operation. The *Journal's* success can only be judged by our readers' comments. Please let us know how good a job we are doing. ■

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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July/
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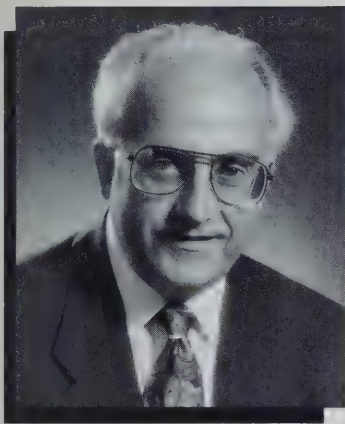
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PRESIDENT'S COLUMN

The Changing Face of Dentistry



Dr. Raymond Wenn
CDA President

Like it or not, it is becoming increasingly clear that Canada can no longer afford its current system of publicly-funded health care.

Provincial governments, burdened with heavy and increasing debts, can no longer keep pace with the exploding costs of health care. The federal government, also saddled with deficit and debt problems, has no money in the pot to help put an end to the growing crisis.

In the early 1980s, health care costs accounted for around 7.5 per cent of Canada's gross domestic product. They now account for 10 per cent of GDP, or about \$70 billion a year. Equally alarming, health care costs are currently increasing at an annual rate of five per cent, or at about twice the rate of economic growth.

To stem the tide, provincial governments implemented a variety of cost-cutting measures, such as cutting back on insured services, decreasing the fees paid to physicians, closing hospital beds and even shutting down entire hospitals. In 1992 and '93, with the exception of P.E.I., every province reduced or eliminated coverage that they had previously provided over and above the basic requirements of Canada's national medicare system. Drug programs for seniors were curtailed,

the allowed frequency of eye examinations was reduced, out-of-country benefits were curtailed, children's dental care programs were eliminated, third party requests for medical services were excluded, and oral surgery coverage was removed. At the same time, however, health care premiums increased.

In effect, the costs of health care in Canada are slowly being transferred to the private sector. As of 1991, 27 per cent of the country's health care costs were already in private hands, and this trend is increasing. The public component of health care spending in Canada actually peaked in 1976, accounting for approximately 77 per cent of total health care costs. Today, 18 years later, statistics released by the Organization of Economic Cooperation and Development rank Canada in the top third of OECD countries in terms of the proportion of health care costs in private hands.

Canada's minister of health, Diane Marleau, is attempting to stem this tide. She recently withheld \$1.75 million in federal transfer payments from British Columbia for not policing extra billing by a group of B.C. doctors. She is also challenging Alberta for allowing private clinics, such as the Gimbel Eye Care Clinic, to operate outside of the national medicare system.

Still, it is becoming increasingly apparent that Canadians will soon be faced with user fees, private health insurance premiums, and even facility charges. Although provincial governments won't admit it, and the federal government is making a show of maintaining a uniform, national system, the costs of health care are gradually being shifted away from the public purse into the private pocket. In practical terms, this shift will likely place an added burden on employers at a time when they are becoming increasingly worried about maintaining their competitiveness in world markets and reducing their per-unit labor costs.

Both employers and employees are struggling with the rising costs of health care. This isn't surprising.

The pool of money available to pay for private health care coverage is not infinite and may even be shrinking. Dentistry must recognize this fact and act accordingly.

With the insurance industry promoting "managed health care plans," and patients faced with paying an increasing share of health care costs out of their own pockets, the importance of openly discussing treatment plan options and fees with patients cannot be overlooked. Dentistry must continue to rely on the basic principles that guided and developed the profession as it assumed its current, enviable, position in Canadian society. It is our responsibility, as dentists, to examine, diagnose and treatment plan our patients. And treatment plans should be inclusive, identifying all appropriate options for patients to maintain and enhance their oral and general health.

In addition, we must work with employers and unions, by offering sound, professional advice when they purchase dental benefit packages. It would be a mistake to allow this area of dental education to remain solely in the realm of the insurance industry.

Our profession should have a say in how Canada spends its public health care dollar. We should seek representation on the local and regional boards that many provincial governments are forming to administer hospital and health services. CDA has already sought representation on the national forum on health care promised by Prime Minister Jean Chrétien during the recent election campaign, and will continue our ongoing lobbying efforts in other areas, including our initiatives to block any new attempt by the federal government to tax employer-paid dental plan premiums.

We must not assume that we can maintain the status quo. Change is all around us. But if we work together, as a strong, united profession, we may be able to influence and direct it to the advantage of all Canadians. ■

*Raymond Wenn, DDS
President of the Canadian Dental Association*

JOURNAL

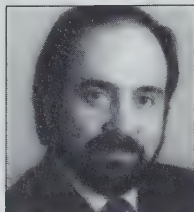
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ADHESION DENTISTRY BERMUDA STYLE '94

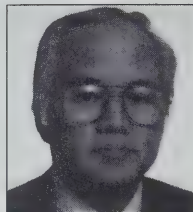
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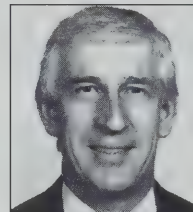
Dr. John Kanca



Dr. David Garber



Mr. Byoung Suh



Dr. John Gwinnett

WHEN: November 2 - 6, 1994

WHERE: Sonesta Beach Resort Hotel, Southampton, Bermuda

SPONSORS: Clinical Research Dental, Bisco Dental (Canada), Bisco Dental (U.S.A.)

DAY 1

Wednesday, November 2, 1994 - 8:00AM - 1:00PM

SPEAKER : Mr. Byoung Suh

TITLE : Chemistry and Adhesion

SUMMARY : Composite and Adhesive Technology has dramatically changed in the past several years. Mr. Suh will review recent changes in technology and explain the relationship between chemistry and adhesion. This relationship is extremely important to the success of today's multitude of dental restorations now available to both patient and dentist.

DAY 2

Thursday, November 3, 1994 - 8:00AM - 1:00PM

SPEAKER : Dr. David Garber

TITLE : The New Changing Face of Dentistry

SUMMARY : Dental practice today is changing exponentially; we are dealing with porcelain laminate veneers, etched porcelain inlays and even veneer bridges, all predictable restorative modalities. Couple this with exciting new ceramic systems, the ability to routinely bond to enamel or dentin, and predictability with osseo-integrated implants, all must change the very way we contemplate the restoration of broken-down mouths.

But with this technology comes new horizons, as dentistry has to look beyond simply restoring teeth and contemplate revamping entire smiles, developing a harmonious relationship and esthetics symmetry between the teeth, the soft tissues and the lips. Surgical plastic procedures have become an integral part of restorative dentistry as have esthetic implant restorations. From the patients' perspective, dentistry is evolving from a concept of the necessities of pain management to esthetic gratification. Today's better informed cosmetic-conscious public is increasingly demanding more of us and expecting more from dental materials and we need to position ourselves to deliver this total dento-facial harmony!

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DAY 3

Friday, November 4, 1994 - 8:00AM - 1:00PM

SPEAKER : Dr. John Kanca

TITLE : Adhesion Dentistry Update

SUMMARY : This presentation will cover the important aspects of adhesion dentistry and how each fit into the general dental practice. Specific topics include:

- Adhesive Systems (a detailed overview)
- Bonding to wet tooth structure
- Bonded Crowns (Pre-sealing & Cementation Procedures)
- Bio-compatibility
- Tooth disinfection
- Class II restorations

DAY 4

Saturday, November 5, 1994 - 8:00AM - 1:00PM

SPEAKER: Dr. John Gwinnett

TITLE: Bonding to Substrates Other Than Tooth Structure

SUMMARY: Dr. Gwinnett will begin his presentation with an overview of the fundamentals of bonding with a focus on new ideas and concepts. Dr. Gwinnett will cover the many clinical considerations for optimizing the bonded interface including:

- Amalgam bonding
(Fundamentals and Technique, Current Systems, Clinical Research Results)
- Non-Tooth Structure Adhesive Dentistry
(Bonding to amalgam, other metals, porcelain, fracture repair!)
- Expanded Uses of Bonding Procedures
(Temporary Pontics, Bonding Emergencies, Desensitizing)
- An overview of the concepts presented at this year's "ADHESION DENTISTRY - BERMUDA STYLE 94"

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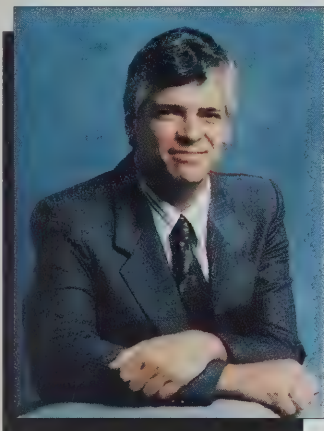
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NEWS UPDATE

James Wegg Named Dentistry Canada Fund Manager



Mr. James Wegg

Mr. James Wegg has been named as the manager of the Dentistry Canada Fund (DCF).

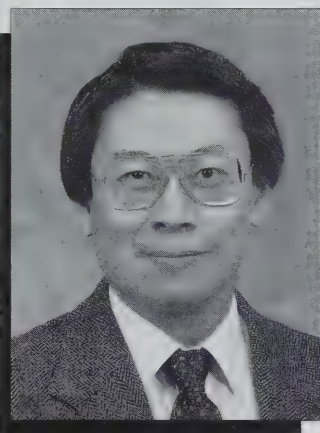
Launched in January 1994 as an umbrella organization to bring CDA's existing dental charities together under a central administration, DCF incorporates the former Canadian Fund for Dental Education, the Canadian Dental Foundation, the Canadian Dental Research Foundation and the Grieve Memorial Lectureship Trust.

Mr. Wegg has an extensive background in all aspects of association management, which includes nearly 20 years of experience with arts and non-profit organizations. Before coming to CDA, he designed a host of programs and special events that raised millions of dollars in support of the goals and missions of these groups.

When asked about his new role with DCF, Mr. Wegg said: "I'm delighted to be working with such an able board of directors which is committed to our goal of optimizing oral health for Canadians. In these early days we are quite busy developing the programs and projects that will fulfil these goals, many of which were already in place within the various organizations — such as the CFDE — which have now been joined together.

"The future is very exciting. The potential of DCF is enormous. I shall certainly look forward to working with our partners and colleagues in dentistry to ensure that education, research, and awareness receive the support and profile they deserve." ■

UBC Appoints New Dean



Dean Edwin Yen

Dr. Edwin H.K. Yen has been appointed dean of the University of British Columbia's faculty of dentistry, effective July 1, 1994.

A graduate of McGill University, Dr. Yen subsequently earned his diploma in orthodontics and a PhD at the University of Toronto. In 1978 he was appointed to the orthodontic section at the University of Manitoba, and in 1987 became head of the department of preventive dental science and director of the graduate and undergraduate programs in orthodontics.

Dr. Yen also maintained an active research laboratory to study the effects of mechanical strain on craniofacial tissues at the cellular level. In addition, he just completed a term as chair of the dental sciences review committee of the Medical Research Council of Canada, and previously served on a study section for the National Institute for Dental Research (U.S.A.). Dr. Yen has also served as president of Omicron

Kappa Upsilon Honor Dental Society, the University of Manitoba Dental Clinical Staff Association, and the Manitoba Society of Orthodontists. He is a former executive board member for the Canadian Association of Orthodontists and for the Canadian Association for Dental Research, and has served on various committees for the Canadian Dental Association, the Manitoba Dental Association and the American Association of Orthodontists.

Before accepting his new position at UBC, Dr. Yen maintained a private practice as a certified specialist in orthodontics in Winnipeg. He has published widely as well as presenting numerous papers at international meetings and symposia. ■

Cycling Helmets Reduce Head Injuries

The Canadian Standards Association (CSA) believes too many children and adults still suffer from unnecessary head injuries in cycling accidents.

In a news release dated April 29, 1994, CSA said that: "By current estimates, fewer than 20 per cent of Canadian cyclists wear helmets, and the Canadian Medical Association reports that 80 per cent of bicycle-related deaths are the result of head injuries. This occurs despite the fact that Canada has an excellent national standard . . . for the testing and certification of cycling helmets. This CSA standard is more stringent than other cycling helmet standards in North America, and cycling helmets certified by CSA to this standard offer great protection to the cyclist.

"Parents purchasing cycling helmets for children should know that CSA-certified helmets are designed solely for use by cyclists who are five years of age and older."

CSA is currently developing helmet safety requirements for children below five years of age. Parents and cyclists should also be aware that as of October 1, 1995, all cyclists in Ontario will be required by law to wear a certified cycling helmet. ■

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Way To Go Canada!



For the second time in five years, Canada has been selected as the number-one place in the world to live.

A recent United Nations report ranking 173 countries in terms of human development ranked Canada number one, based on a combination of three factors: average income, life expectancy and educational attainment.

The report was prepared by the UN Development Program based on the conditions found in each country in 1992. By order of ranking, the top 10 countries were: Canada, Switzerland, Japan, Sweden, Norway, France, Australia, United States, the Netherlands and the United Kingdom. ■

Dr. Norman Levine Receives Distinguished Award

Dr. Norman Levine of the University of Toronto was singularly honored April 16, 1994, when he became the first recipient of the Harold Berk Award for Excellence in the Field of Oral Health Care to the Disabled.

The award, presented during the 6th National Conference on Special Care Issues in Dentistry in Chicago, recognized Dr. Levine's international reputation in dental care for the disabled.

Former CDA Executive Council Member Dies At Age 57

Dr. Jean Laporte, a former member of CDA's executive council, died suddenly in St. Hubert, Quebec, May 31, 1994. He was 57.

An executive member of the Quebec Dental Association from 1974 to 1977 and its vice-president in 1976, Dr. Laporte was first appointed to the CDA board of governors in 1980 and served as a member of CDA's executive council from 1981 to 1983.

Dr. Laporte received his BA from Montreal's College Ste. Marie in 1959 prior to earning a dental degree from the University of Montreal in 1964. He served as a captain in the Canadian Dental Services from 1964 to 1969 before entering private practice. He subsequently maintained a private dental office from 1969 to 1983, when ill health forced him to retire. ■



Dr. Jean Laporte

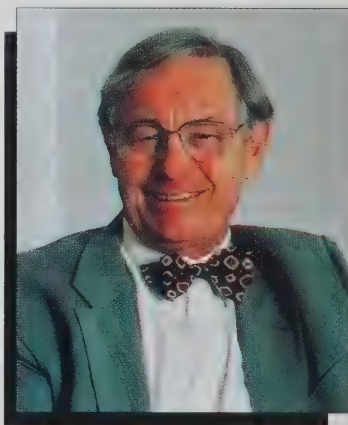


Dr. Norman Levine thanks the American Academy of Dentistry for Persons with Disabilities for honoring him with the Harold Berk Award for Excellence in the Field of Oral Health Care to the Disabled.

Named in honor of Dr. Harold Berk, one of the founding members of the American Academy of Dentistry for the Handicapped (now known as the American Academy of Dentistry for Persons with Disabilities), the award recognizes individuals who have shown leadership and genuine commitment in working with and treating persons with disabilities.

Dr. Levine is currently associate dean for undergraduate and clinical affairs, and immediate past head of the department of pediatric dentistry at the University of Toronto. ■

Nobelpharma Celebrates Prof. Per-Ingvar Brånemark's 65th Birthday



Professor Per-Ingvar Brånemark

In honor of Professor Per-Ingvar Brånemark's 65th birthday, Nobelpharma Canada Inc. has donated an additional \$5,000 to the Brånemark Cranio-Maxillofacial Rehabilitation Fund in 1994.

Established to allow patients with limited or no financial means to receive implant treatment, the fund is administered by the Dentistry Canada Fund on behalf of Nobelpharma. Each year, it makes up to

\$3,000 in Brånemark components available to a multi-disciplinary surgical team. To participate in the program, the team must be affiliated with the faculties of dentistry and medicine of a recognized Canadian university or teaching institution and their associated teaching hospitals. The winning team provides treatment to selected patients at significantly reduced fees.

The Brånemark fund also helps to promote educational programs related to reconstructive surgery, prosthetic therapy, and prosthodontic therapy, based on the principles of osseointegration.

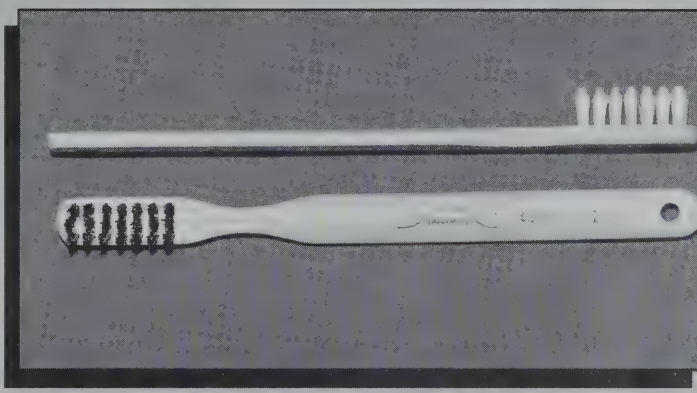
For more information, contact: Mr. James Wegg, Manager, Dentistry Canada Fund, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. Only recognized Canadian Universities and teaching institutions are eligible to apply for funding under this program. ■

"WHAT'S IT"

This month's "What's It" mystery concerns two unique toothbrushes that were donated to the CDA Museum by Dr. Charles Hickling of Kincardine, Ontario.

Stamped "Takamine" on the handle, the brushes were accompanied by a pamphlet with an unusual message. "The money you pay for Takamine brushes goes: to China for the best grade toothbrush bristles; to various countries in the Far East for the bamboo; to Japan for bleaching bristles and inserting in handles (this amount is less than five per cent of the retail price); to the United States for import duty (an amount equal to 50 per cent of the items above, plus one cent for each brush); to American labor for all cartons, all printing, all finishing and shipping; to the American retailer who sells you these brushes."

If any reader can shed some light on the origin and history of these brushes, please contact Dr. P. Ralph Crawford, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■



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Les personnes intéressées doivent faire parvenir leur curriculum vitae, leur dossier universitaire, trois lettres de recommandation ainsi qu'un court texte démontrant leur intérêt aux deux disciplines à:

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Toutes les informations devront être reçues au plus tard le 31 octobre 1994.

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No. 7

589

JULY,
1935

Practice Building

By H.C. Visick, L.D.S., London, England

(Abstract of paper published in *British Dental Journal*, April 15, 1935.)

After 30 years of practice, there are certain things which the author regards as fundamental.

The discussion centres around the surgery and methods employed in practice.

A man who is a very second-rate dentist from the operating point of view, may succeed in building up a highly lucrative practice if he possesses something else which attracts the public. One must try to see things from the patient's standpoint.

One must not only *be* clean — one must *look* clean. Always wash the hands in front of the patient. Keep saliva ejectors in glass covered jars and never connect to the cuspidor until the patient is in the chair.

Do not have instruments lying around when patient enters the operating room.

Remove instruments and drugs that are not often used, from the cabinet.

Keep equipment in good repair.

It is not good practice to charge for X-ray pictures taken during the course of a visit unless the patient has come specially for that purpose. If the patient cannot afford pictures one deprives oneself of the benefit of the X-ray. (Those who discussed this paper were not unanimously in favour of taking X-ray pictures without fee.)

Scaling is the very foundation of good dentistry, and while this is being done have dentures polished.

Keep accurate records. It is disturbing to the patient to find that the operator has forgotten what work was to be gone on with.

Get something finished at each visit and make it a point to tell the patient before he gets out of the chair just what has been done. Explain matters as you go along.

Discuss fees in a frank, straightforward, businesslike manner with patients, and base fees on so much per hour.

In quoting fees for dentures, be sure to make clear just what the fee includes.

Plenty of flowers in the surgery and waiting room are a great asset.

Render accounts promptly.

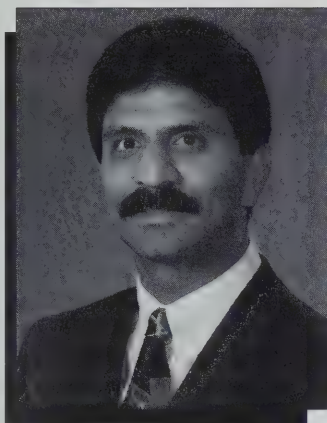
Patients come to get something done to their teeth, so do not be beguiled into talking about one's holiday or one's golf. When the work is done, talk as much as desired, but do not forget that patients go for holidays also.

Diamond Jubilee of Publication

Throughout 1994, the Journal of the Canadian Dental Association celebrates 60 years of publication as the authoritative "voice" of dentistry in Canada. Each month, in commemoration of its Diamond Jubilee, the Journal will reprint an article from Vol. 1, 1935.

As this month's selection makes clear, many of the basic tenets of sound practice management have not changed in the last 60 years. In 1935, dentists were advised to be up-front about fees, keep their office and operatory clean, and wash their hands in front of the patient. Sound familiar?





Managing Anxious Patients

Imtiaz Manji, B.Sc.

President of ExperDent

It doesn't seem to matter how streamlined practice management systems are — in my many years of consulting with dentists, I've yet to see a practice that has completely eliminated cancellations and no-shows, or one that can boast near perfect recall effectiveness.

Certainly, some practices are more successful than others when it comes to recalls and cancellations, but in reality the dental team can only exert so much control. If a patient is determined to avoid making an appointment, to cancel one at the last minute, or not to show up at all, the team is left in the lurch.

Interestingly, few practices look beyond the obvious frustration of missed or cancelled appointments to ask why they occur. Why are certain patients so hard to schedule? Why, when these individuals finally commit to an appointment, do some cancel on short notice or, worse still, fail to appear?

Although patient cancellations and no-shows occur for a myriad of reasons, the biggest single factor may be fear. Patients may be only slightly anxious or they may be extremely dental phobic, but an estimated three out of every four experience some dental anxiety. The potential implications are staggering. If a considerable portion of this patient segment succumbs to their fear — by avoiding treatment — it isn't only their oral health that will have fallen by the wayside, but also

their attendance at your practice. Dental practitioners can safely assume that their patient base is infused with fearful individuals. The question is, how do you help these patients to overcome their fear.

Breaking the Link Between Pain and Dentistry

For dentists and their staff, dental fear is often a curious phenomenon. Because they're privy to the fact that modern dentistry is virtually painless, many find it hard to relate to the fact that a significant group of their patients still equate dentistry with pain. And even though the profession has made great strides in developing pain-control methods — beginning with the discovery of general anesthesia in the mid 1840s — it is still having a tough time shaking its dubious reputation.

The problem may be that the profession's approach to fearful patients has largely revolved around the clinical arena, namely through the development of treatment modalities and the refinement of pain-control techniques. On these counts, the dental profession can applaud itself. In doing so, however, it must realize that these advancements alone are not enough to alleviate people's fears.

Because the expectation or anticipation of pain, rather than actually experiencing it, is often what sends patients into a fearful state, the profession has to do more than simply declare that dentistry and

pain are not synonymous. Dentists must address the psychology of fear. Fortunately, there are signs that this is happening — dental students in many universities are being taught to treat fearful patients as a special-needs group. By training its members on how best to manage fearful individuals, the profession stands to make great strides in mainstreaming fearful patients into dental practices. (For established practitioners, there is no shortage of literature, or even seminars, on how to demonstrate trust, respect and empathy toward white-knuckled patients.)

What the Dental Team Can Do

There are a number of measures that the dental team can take to encourage fearful patients to embrace — rather than avoid — dental treatment.

Educate and Communicate

Given that fears are learned behaviors, it follows that what has been learned can subsequently be unlearned. But what about those patients who haven't yet formed an impression one way or another about the dental experience? Most often these are young children. Dental teams have to do their best to counteract negative media images of dentistry. It's also vital to ensure that parents and/or older siblings do not pass their own fears onto younger children, who are highly impressionable beings.

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Scaremongering, whether it is intentional or not, runs the risk of sabotaging what would likely be positive dental experiences. The key to achieving a fear-free generation of dental patients lies in enlisting the support and participation of family units.

Today, dental practices employ a variety of tactics to give kids a favorable image of dentistry, from allowing them to touch and explore the instruments, to blowing up balloons with the chairside air syringe. Interestingly, a welcome byproduct of providing children with positive dental experiences is the dramatic impact that this can have on fearful parents, who often sit at chairside during their child's appointment.

But what about those patients whose fears are already firmly rooted and may be getting the better of them? What can we do to replace their negative connotations of dentistry with positive ones?

The key is to build a relationship of trust between the practice and the patient. And the means for achieving this rapport is communication — at every stage of contact between the practice and the patient.

Let's suppose that a fearful patient summons up the courage to call your practice (which, incidentally, can be a fear-invoking experience in and of itself). If your receptionist's antennae sense a fearful patient on the other end of the line, a brief discussion of the various methods your practice employs to keep pain at bay — be they pharmacological or behavioral — may be appropriate. To maximize the chances of getting this patient to keep his or her appointment, there should be as little lag time as possible between the phone call and the actual visit date. A long delay gives the fearful patient too much of a "window" to cancel.

It's also a good idea to find out who referred the patient, and to mention that you'll be contacting this individual to extend your thanks. Establishing this personal connection can deter the fearful patient from cancelling. Also, try to schedule fearful patients at non-

peak times, so that they will have a short wait in your reception area and a calm environment surrounding them.

A first visit to your practice should include the standard gathering of medical data, as well as pertinent information about the level of the patient's anxiety and, if possible, what triggers it.

Dental fear may be highly specific or it may be generalized. It all depends on the patient. But whether you use one of the questionnaires designed specifically to assess patient fear, or you develop your own, the idea is to open the lines of communication and get the patient to talk openly about his or her fears. Asking open-ended questions such as, "Can you tell me about your previous dental experiences?" is a good way to initiate that dialogue.

If a fearful patient visits your practice because of an emergency situation, remember that it's also an ideal time to educate this patient on the benefits of preventive dentistry. You should seize this opportunity to explain to the patient that this is the best way to avoid pain — not to mention high dental costs.

Because some fearful individuals try to hide their anxieties, it's important for the dental team to create a climate that allows — and encourages — patients to speak out about their fears. Patients will be quick to distinguish those practices that understand their fears, and empathize with them, from those inclined to brush patients' fears under the proverbial rug. But paving the way for open communication is the only first step in treating fearful patients, it's also essential to find and implement coping strategies.

Customize Treatment

Although no patient should be allowed to feel as if he or she is just a "number," it's particularly important to ensure that fearful patients are never left with this impression. The dental team needs to take the time to listen to their concerns, learn about them, gain their confidence and, finally, administer treatment accordingly. A custom approach, rather than a formulaic

one, must be taken. Some fearful patients may be highly sensitive to the sound of the drill, while for others it may be just the tilting of the dental chair.

Try to find out the source(s) of their individual fears. Discuss the details of planned procedures with patients before you initiate treatment. If patients know what to expect — and also know that treatment can be stopped at any time they want — this empowerment often helps to quell fears. Some practices tell patients to raise their right or left hand to indicate that they need a break. It may be helpful to place a ribbon or similar item on the designated hand, so that patients don't accidentally raise the wrong one. In a fearful state, patients may raise the wrong hand, unintentionally interfering with the dental treatment.

It's also important to recognize that spending extra minutes with fearful patients — and they will take extra minutes — is not a waste of time. In fact, it's actually a practice-builder. Cultivating the confidence of fearful patients will advance your reputation as a practitioner who is sensitive to their needs, and yield referrals from this untapped market.

Many patients are not aware of how certain treatment modalities have dramatically enhanced the delivery of dentistry and preventive hygiene care. Keep patients informed, both at visits to your practice and in the printed information you provide them, about such stellar achievements. Talk to them about lasers or electronic anesthesia, and how they are helping to change the face of dentistry.

Let your patients know what treatment options are available to help them cope, both behavioral and pharmacological, and discuss the specifics of each. While pharmacological methods assist in managing fearful patients, it is widely accepted that they do not ultimately ease their fears in the way that behavioral approaches can. Practices geared up to meet the needs of fearful patients are using some or all of the following techniques:



*Dr. Richard Rayman
Willowdale, Ontario*



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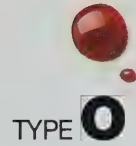
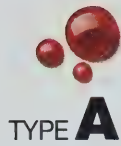
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A guide to the types of patient



TYPE **B**



TYPE **AB**

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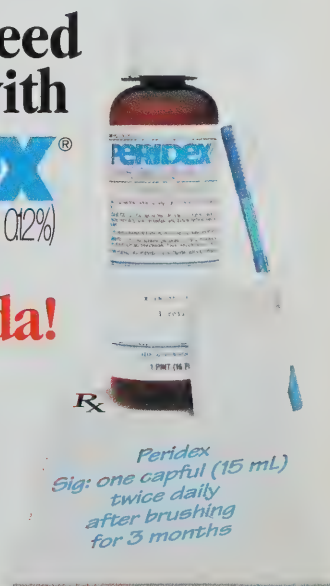
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Pharmacological

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- electronic anesthesia
- conscious sedation
- deep sedation
- general anesthesia

Refer When Necessary

Although behavioral or pharmacological approaches to dealing with dental fear are often successful, there are cases that require more attention or expertise than the dental team alone can provide. Some patients benefit from visiting a counsellor or psychologist trained in treating phobias. Working cooperatively, dental teams and such trained professionals can

provide patients with a range of coping skills to reduce or eliminate their fear, allowing them to proceed with recommended dentistry.

Summary

During a 1993 CDA-sponsored seminar, *New and Improved: the Canadian Dental Consumer in the '90s*, the lecturer, Mark Sarner of Manifest Communications, indicated that there was "cause for celebration." Why? Fewer people than ever believe that dental visits equal pain. A recent survey revealed that 58 per cent of the respondents disagreed with the statement, "When I think of going to the dentist, I think of pain."

Through sensitivity, compassion and ever-advancing pain control, dental teams can rise to the challenge of further eliminating the perception that dentistry and pain go hand in hand, and thereby reduce dental fears. If this is done successfully, the profession could obtain future survey results in which a full 100 per cent of respondents disagree with the statement, "When I think of going to the dentist, I think of pain." Now that would be cause for some serious celebration. ■

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Just walking to the grocery store...



...even a little regular physical activity makes a healthy difference!

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82ND WORLD DENTAL CONGRESS ♦ VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE

Logistics — Tackling our biggest challenges



The 82nd World Dental Congress will be a spectacular event as dental professionals from the world over gather in Vancouver for the seven days of the convention. Anyone who has contemplated the work that goes into putting a meeting together can imagine that there would be challenges to meet and obstacles to overcome. Adequate space had to be provided for FDI Business Meetings and more than 100 lectures, hands-on courses, limited attendance

sessions and live-television presentations, not to mention free communications, table clinics, and poster presentations. A new Exhibit Hall had to be opened to meet the overwhelming demand and accommodation had to be secured for the thousands of participants who will attend from outside the Vancouver area. As we pull together the last strings, however, I am extremely pleased to look back at the challenges we have had to face and see them conquered.

The greatest challenge we have had to tackle is ensuring that everything will run smoothly during the convention. Ideally, it would have been great if the scientific program and other meeting requirements could have been accommodated in a single facility. However, the sheer magnitude of FDI 1994 demands that several venues are used. We have had to spread to 10 locations throughout the downtown core. While most of the lectures will take place at the Vancouver Trade and Convention Centre, facilities in downtown hotels (all at close proximity to the VTCC) will be used for other segments of the scientific program.

Furthermore, various groups attending FDI 1994 are taking advantage of the fact that many of their members will be in Vancouver at the same time, thus affording a unique opportunity to hold a meeting. As managers of the meeting space, we have been faced with the challenge of providing each group with the appropriate size meeting room for its function.

The use of several venues during the Convention presented a unique problem. In order to ensure that participants will easily find their way to where a particular lecture, course or event is taking place we have had to plan our signage very carefully. In addition, we will be recruiting volunteers, mostly among dental students, to direct partici-

pants to the different locations. It is a major endeavour to recruit and coordinate volunteers who will then have to be briefed on every aspect of the convention so that they may help participants with utmost efficiency.

Many participants attend dental meetings to discover the latest technological developments in their field. With nearly 600 booths setting up at the Vancouver Trade & Convention Centre, everyone will be sure to find what they're looking for and exhibitors certainly share in the excitement of participating in the largest dental trade exhibit ever held in Canada. When the original Exhibit Hall filled nearly one year ago, and the waiting list only kept growing, the Organizing Committee was faced with the challenge of trying to accommodate a greater number of exhibitors. I am pleased to report that everyone has been accommodated. We are fully confident that everyone will benefit from this and that the wide range of products and services offered by FDI 1994 exhibitors will satisfy even the most discriminating attendee.

The greatest challenge with which we, as meeting planners, have been faced with has been the limited number of hotel rooms in which to accommodate thousands of participants. Fortunately, Vancouver hotel managers have come to our rescue and have offered additional blocks of rooms. We now have expanded facilities to house those who request accommodation.

Although there have been many challenges, each have been followed by a victory and that's the exciting part. We anticipate that the FDI 1994 World Dental Congress will be everything and even more than participants are expecting. It will be a great feeling to enjoy the fruits of our labour in just a few months time. See you this October in Vancouver!

Ted Ramage, D D S
Chairperson, Logistics
FDI 1994 Organizing Committee
c/o Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062



Your Checklist To Excellence And Enjoyment!

The 82nd World Dental Congress is fast approaching. October 2 - 8 are the dates to mark in your calendars. Dental Professionals from the world over have enrolled for FDI '94. Are you planning to be a part of this exciting international meeting? Read further and see all the marvelous functions being offered.

✓ AMAZING DESTINATION!

FDI 1994 will be held in beautiful Vancouver, Canada. Enrolment for the Congress has been increasing at an unprecedented rate! There is a substantial mixture of Canadian, US and International participants — an international meeting you'll not want to miss!

✓ MORE HOTEL ROOMS!

There are now more hotel rooms for FDI '94 participants. The hotels have been kind in expanding the number of accommodations for our meeting. All hotel requests must go through the FDI '94 housing bureau. When sending in your enrolment forms remember to fill out your hotel details in Section X.

✓ COMMITMENT TO OPTIMAL ORAL CARE!

The scientific program is continuously being expanded and cultivated. The hands-on courses have sold-out and repeat lectures have been added! Limited attendance courses and live television presentations have also been popular selections and still have spaces available. Have you reserved your seat?

✓ EXTRAORDINARY EXHIBITS!

Two exhibit halls (Exhibit Hall Level and Cruise Ship Level) have completely filled — bringing you nearly 600 booths of the latest in dental technology! Open between October 4 - 7 you can explore through the exhibits and view the state-of-the-art equipment brought to you from around the world.

✓ EVENINGS OF EXTRAVAGANZA!

The social program can only be described as spectacular! The Opening Ceremony launches the Congress with unforgettable entertainment displaying the cultural diversity of Canada. An International Evening will follow with a plethora of foods and music from around the globe. In addition, there will be a Scenic Dinner Cruise, a Discover the Orient affair, a Salmon Barbecue and Logging Show and an extravagant FDI Ball. We have increased the number of tickets for these functions so that everyone can be accommodated. Get your tickets today!

✓ SPECTACULAR SITES!

Many visits and one-day tours will take you to all the best tourist attractions throughout Vancouver and the surrounding areas. Places such as Victoria Island, Whistler Mountain, Capilano Suspension bridge, Gastown and Steam Clock excursion and much more will be enjoyed for a nominal fee!

✓ FUN AND ADVENTURE!

Programs designed especially for children promise to be full of fun and adventure! Supervision will be provided on outings to Stanley Park, the Vancouver Aquarium, the North Shore and the Science World/OmniMax theatre.

✓ GREAT HOLIDAY TRAVEL!

Do you like to combine travel with your learning? Fabulous holiday excursions prior to and following the Congress have been planned. Bring the family and enjoy a cruise to Alaska or Los Angeles, venture on over to Australia and New Zealand or take a leisurely, scenic train ride through the Canadian Rocky Mountains!

We anticipate your visit to Vancouver and look forward to welcoming you.



For additional information or enrolment forms, consult your preliminary program or contact: FDI 1994 Organizing Committee, c/o Canadian Dental Association, 1815 Alta Vista Dr., Ottawa, Ont., K1G 3Y6 Tel.: 1-800-267-6354 / Fax: (613) 523-3062



FDI
1994

VANCOUVER

OCTOBER 2 - 8, 1994

There are many events and tourist attractions to fill your stay in Vancouver.
The following programs have been organized for the enjoyment of all Congress participants:

VISITS & ONE-DAY TOURS:

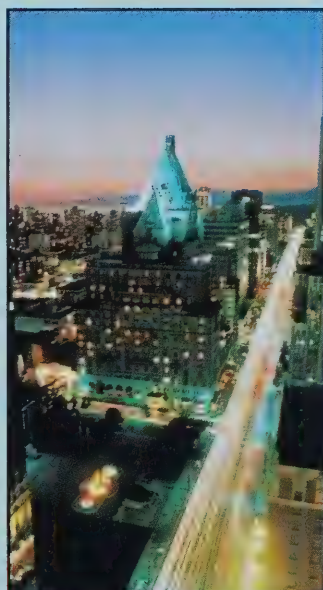
Many day trips and visits to spectacular tourist spots have been organized to take participants throughout Vancouver.

- Vancouver City Tour
- Salmon Fishing
- Scenic Harbour Cruise
- North Shore and Grouse Mountain
- Vancouver Aquarium: "Breakfast with the Whales"
- Vancouver City and Granville Island
- Royal Hudson Steam Train & Britannia Excursion
- Museum of Anthropology
- A Day in Victoria
- Whistler Mountain Day Trip

CHILDREN'S PROGRAM:

Designed to be fun and adventurous. Supervision provided. Children aged 5 to 12.

- North Shore Excursion
- Science World/ Omnimax Theatre
- Vancouver Aquarium and Stanley Park



PRE- AND POST- CONGRESS TOURS:

Enjoy fabulous travelling before and after the FDI '94 meeting.

- Alaska Cruise
- Canadian Rocky Mountains
- Hawaii
- Los Angeles
- Australia & New Zealand

SOCIAL EVENINGS:

Elaborate evenings designed to characterize the cultural diversity of Canada in entertainment, food and music are offered.

- Opening Ceremony
- International Evening
- Scenic Evening Dinner Cruise
- Discover the Orient Evening
- Salmon BBQ/ Logging Show
- FDI Ball

For additional information, consult your preliminary program or contact:

FDI 1994 Organizing Committee,
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Multidisciplinary Approach In Implantology
GENERAL SCIENTIFIC PROGRAM



Dr. Rita Bauer
Techniques For Standardized Photography In Dentistry
GENERAL SCIENTIFIC PROGRAM



Dr. Muriel J. Bebeau
Ethics And Professionalism In A Revolutionary Age
GENERAL SCIENTIFIC PROGRAM



Dr. Bruce Blasberg
(CAOM Program) Oralfacial Pain: Management Of Difficult Facial Pain Problems
GENERAL SCIENTIFIC PROGRAM



Dr. Alan Boghosian
Dental Materials For Dental Assistants
HANDS-ON COURSE



Dr. Pierre Boudrias
Temporary Fixed Partial Denture Restoration
GENERAL SCIENTIFIC PROGRAM

Esthetic And Functional Management With Implant-Supported Protheses
GENERAL SCIENTIFIC PROGRAM



Dr. Henrik Simon Brand
Mechanism And Measurement Of The Cardiovascular And Neuroendocrine Responses During Stress Induced By Different Types Of Dental Treatment
GENERAL SCIENTIFIC PROGRAM



Dr. Ralph Brooke
(CAOM Program) Oralfacial Pain: Management Of Difficult Facial Pain Problems
GENERAL SCIENTIFIC PROGRAM



Ms. Sherry Burns
How To Choose And How To Use The Newest Currettes – Periodontal Instrumentation Workshop
HANDS-ON COURSE

Isn't It About Time To Get On The Cutting Edge?? The Care, Maintenance And Sharpening Of Periodontal Instruments
HANDS-ON COURSE

What's Old ... What's New ... What's Tried ... What's True ... New Instruments For Dental Professionals
GENERAL SCIENTIFIC PROGRAM



Dr. Kenneth Burrell
FDI Commission: Role Of ADA Product Evaluation Programs
GENERAL SCIENTIFIC PROGRAM



Dr. Jeffrey M. Coil
Dental Radiography Seminar
HANDS-ON COURSE



Dr. Pierre Colombet
FDI Commission: Assuring Quality Of Dental Health By Obtaining Equivalency Of Dental Diplomas
GENERAL SCIENTIFIC PROGRAM



Dr. James A. Cottone
Infection Control In Dentistry: 1994
GENERAL SCIENTIFIC PROGRAM



Ms. Jennifer M. De St-Georges
Creating A Patient Centered Practice By Developing A Solid Patient-Practice Relationship
GENERAL SCIENTIFIC PROGRAM

Symposium On Practice Management: Involving Your Staff In Patient Communication ... The Key To Practice Success
GENERAL SCIENTIFIC PROGRAM



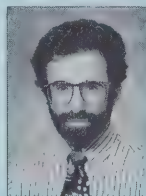
Mr. Ted DeVries
Computers – Up Close And Personal
HANDS-ON COURSE

Theory Of Computerization
HANDS-ON COURSE



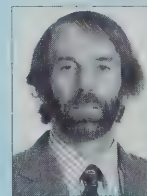
Dr. James R. Dunn
Aesthetic Dentistry: Bonding With Composites And Ceramics
GENERAL SCIENTIFIC PROGRAM

Aesthetic Dentistry
HANDS-ON COURSE



Dr. Joel Epstein
Symposium On Current Topics In The Diagnosis And Treatment Of Mucous Membrane Diseases: The Management Of Oral Cancer Patients
GENERAL SCIENTIFIC PROGRAM

(CAOM Program) Oralfacial Pain: Management Of Difficult Facial Pain Problems – Atypical Facial Pain
GENERAL SCIENTIFIC PROGRAM



Dr. J.D.B. Featherstone
Symposium On Oral Research: Caries Risk Assessment
GENERAL SCIENTIFIC PROGRAM



Dr. Ronald A. Feinman
Esthetic Restorative Procedures, How, When & Why
LIMITED ATTENDANCE SESSION

Bleaching And Porcelain Laminates – The Natural Combination
GENERAL SCIENTIFIC PROGRAM



Dr. Bob Forest
This New Economy, Where Are We Going With It, How Are We Going To Grow With It??
GENERAL SCIENTIFIC PROGRAM

Presenting your lecturers ...

FDI
1994



Dr. Abdul Gaffar
*Colgate Symposium:
Calculus Prevention Agents*
GENERAL SCIENTIFIC PROGRAM



Dr. Michael Goldfogel
Esthetic Update 1994
HANDS-ON COURSE

*A Technique And
Management Approach
To Restorative And
Esthetic Dentistry*
GENERAL SCIENTIFIC PROGRAM



Dr. Raymond S. Greenfeld
Acute Dental Emergencies
GENERAL SCIENTIFIC PROGRAM



Dr. Miriam Grushka
*(CAOM Program)
Oral Facial Pain:
Management Of Difficult
Facial Pain Problems*
GENERAL SCIENTIFIC PROGRAM



Dr. Walter Hailey
*The Missing Link
In Dentistry*
GENERAL SCIENTIFIC PROGRAM



Dr. Torsten Jemt
*Recent Prosthetic Advances
In Osseointegration Ad
Modern Branemark*
HANDS-ON COURSE

*Recent Prosthetic Advances
In Osseointegration*
GENERAL SCIENTIFIC PROGRAM



Dr. Donald Joondeph
*Early Orthodontic
Management Of Significant
Skeletal Discrepancies*
GENERAL SCIENTIFIC PROGRAM

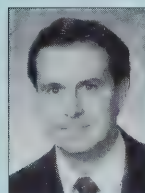


Ms. Anita Jupp
*A New Era Of Patient
Education And Case
Acceptance*
GENERAL SCIENTIFIC PROGRAM

*Change - An Essential
Part Of Practice Growth*
GENERAL SCIENTIFIC PROGRAM



Dr. Yuzuru Kaneko
*Symposium On Medical
Emergencies In The Dental
Office - Are You Prepared?
How To Handle It?*
GENERAL SCIENTIFIC PROGRAM



Dr. Allen Kincheloe
Esthetic Update 1994
HANDS-ON COURSE
*A Technique And Management
Approach To Restorative And
Esthetic Dentistry*
GENERAL SCIENTIFIC PROGRAM



Ms. Nancy Knispel
*How To Choose And How To Use The Newest Curettes -
Periodontal Instrumentation Workshop*
HANDS-ON COURSE

*Isn't It About Time To Get On The Cutting Edge?? The Care,
Maintenance And Sharpening Of Periodontal Instruments*
HANDS-ON COURSE



Dr. Gilles Lavigne
*Bruxism: Controversy
And Management*
GENERAL SCIENTIFIC PROGRAM



Dr. Racquel Z. LeGeros
*Colgate Symposium:
Composition And
Structural Aspects Of
Dental Calculus (Tartar)*
GENERAL SCIENTIFIC PROGRAM



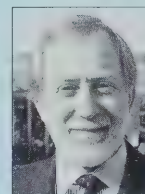
Ms. Annette Ashley Linder
*Economics In Dental
Hygiene - Recall Redefined*
GENERAL SCIENTIFIC PROGRAM



Dr. Alan Lowe
*The Success Of Oral
Appliances In The
Treatment Of Sleep Apnea
And Snoring*
GENERAL SCIENTIFIC PROGRAM



Dr. K. Mäkinen
*Xylitol Symposium:
Xylitol Gum Programs In
Child Populations With
Advanced, Untreated Caries*
GENERAL SCIENTIFIC PROGRAM

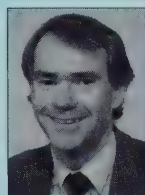


Dr. Stanley Malamed
*Pain And Fear And The
Future Of Dentistry*
LIMITED ATTENDANCE SESSION

*Vasopressors And
Heart Disease*
GENERAL SCIENTIFIC PROGRAM



Dr. Irwin Mandel
Colgate Symposium
GENERAL SCIENTIFIC PROGRAM



Dr. Philip Marsh
*Symposium On Fluorides:
Antiplaque And
Antimicrobial Agents -
Clinical Applications*
GENERAL SCIENTIFIC PROGRAM

*Ecological Approaches
For The Control Of
Dental Plaque*
GENERAL SCIENTIFIC PROGRAM



Dr. Howard Martin
*Endo For The '90's - Flare,
File And Fill With New
Instrumentation*
HANDS-ON COURSE



Dr. Rick Mathias
*Symposium On
Infection Control -
Has It Gone Too Far?*
GENERAL SCIENTIFIC PROGRAM



Dr. Glen McGivney
Removable Partial Dentures
HANDS-ON COURSE

*The Unhappy
Denture Patient*
GENERAL SCIENTIFIC PROGRAM



Dr. Roland Meffert
*Symposium On Guided
Tissue Regeneration:
Absorbable vs.
Nonresorbable Membranes*
GENERAL SCIENTIFIC PROGRAM

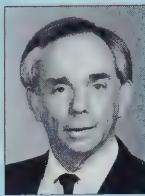


Dr. Molinari

Symposium On Infection Control – Has It Gone Too Far? Occupational Infectious Diseases And The Challenge Of Infection Control

GENERAL SCIENTIFIC PROGRAM

Practical Infection Control For The 1990's
GENERAL SCIENTIFIC PROGRAM



Dr. Stephen Moss
Infant Dental Care – What, Why And How

GENERAL SCIENTIFIC PROGRAM



Dr. Graham Mount
The Wonderful World Of Glass Ionomer Cements

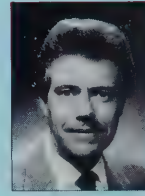
GENERAL SCIENTIFIC PROGRAM

Symposium On The Dynamic World Of Dental Materials
GENERAL SCIENTIFIC PROGRAM



Dr. Terry Myers
Different Types Of Lasers And Their Use

GENERAL SCIENTIFIC PROGRAM



Dr. Craig K. Naylor
Restorative Prosthodontics – Techniques For Improved Esthetics And Function
GENERAL SCIENTIFIC PROGRAM



Dr. Ken Neuman
Cosmetic Dentistry / Cosmetic Imaging – New Vistas In Communication
GENERAL SCIENTIFIC PROGRAM



Dr. Erik Olsen
FDI Commission: Quality Assurance – The Role Of The FDI
GENERAL SCIENTIFIC PROGRAM

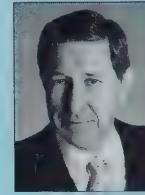


Dr. Thomas Olson
Focus On Tax Planning Of The Future
GENERAL SCIENTIFIC PROGRAM

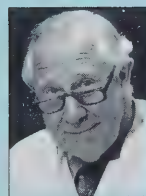


Dr. J.P. Ouhayoun
The Use Of Filler Biomaterials As Bone Substitutes In Periodontology And Implantology
GENERAL SCIENTIFIC PROGRAM

Symposium On New Frontiers In Periodontics: The Role Of Micro-Organisms In Periodontitis
GENERAL SCIENTIFIC PROGRAM



Dr. Roy Page
Periodontics For The 1990's And Beyond
LIMITED ATTENDANCE SESSION
Symposium On New Frontiers In Periodontics: New Diagnostic Tools
GENERAL SCIENTIFIC PROGRAM



Prof. Jens J. Pindborg
Symposium On Infection Control – Has It Gone Too Far? The Current Global Status
GENERAL SCIENTIFIC PROGRAM

Current Concepts On Oral Precancer
GENERAL SCIENTIFIC PROGRAM



Dr. James Pride
Symposium On Practice Management: Employee Satisfaction – What Makes A Great Dental Team
GENERAL SCIENTIFIC PROGRAM

The New Business Of Dentistry
GENERAL SCIENTIFIC PROGRAM



Prof. Peter Reichart
Oral Surgery For The General Practitioner
GENERAL SCIENTIFIC PROGRAM



Dr. E. Dianne Rekow
A 1994 Update On CAD/CAM Systems
GENERAL SCIENTIFIC PROGRAM



Dr. Denis Robert
Biomaterials And Restorative Dentistry Techniques
GENERAL SCIENTIFIC PROGRAM



Dr. Pat Robertson
Dental Radiography Seminars
HANDS-ON COURSE



Dr. Keith Rossein
Provisional Restorations: Two User Friendly Restorative Techniques
HANDS-ON COURSE



Dr. Mariano Sanz-Alonso
Symposium On New Frontiers In Periodontics: Treatment Modality Update
GENERAL SCIENTIFIC PROGRAM



Ms. Dale Scanlan
Dental Hygiene And The Implant Patient
GENERAL SCIENTIFIC PROGRAM



Dr. Jeffrey Sherman
Dental Electrosurgery For The 90's
HANDS-ON COURSE



Dr. Clyde L. Shultz
Recession Proof Your Practice: Strategies For Minimizing The Effects Of Economic Downturn
LIMITED ATTENDANCE SESSION



Dr. Sol Silverman, Jr.
Update On Infectious Diseases In Dentistry
GENERAL SCIENTIFIC PROGRAM
Update On Premalignant Lesions And Oral Cancer
GENERAL SCIENTIFIC PROGRAM

Presenting your lecturers ...

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1994



Dr. Ami Smidt

Esthetic Restorative Procedures – How, When And Why
LIMITED ATTENDANCE SESSION



Dr. Dennis C. Smith

Symposium On The Dynamic World Of Dental Materials: Biocompatibility Of Dental Materials
GENERAL SCIENTIFIC PROGRAM

Everything New Is Old Again
GENERAL SCIENTIFIC PROGRAM



Dr. Karl-Johan Soderholm

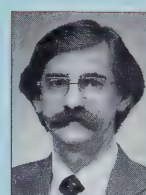
Symposium On The Dynamic World Of Dental Materials
GENERAL SCIENTIFIC PROGRAM

In Vivo/In Vitro Evaluations Of Dental Composites
GENERAL SCIENTIFIC PROGRAM



Dr. Peter Stevenson-Moore

Osseointegrated Implants For The Partially Edentulous Patient
LIVE TELEVISION PRESENTATION



Dr. George K. Stookey

Symposium On Oral Research: Practical Use Of Fluorides For Caries Control
GENERAL SCIENTIFIC PROGRAM



Dr. Jason M. Tanzer

Xylitol Symposium: Caries Inhibition By Xylitol Chewing Gum
GENERAL SCIENTIFIC PROGRAM



Dr. Sverker Toreskog

Construction Without Destruction – Clinical Consequences Of Porcelain Bonded To Tooth-Structure
GENERAL SCIENTIFIC PROGRAM



Dr. Luc Trahan

Xylitol Symposium: The Action Of Xylitol On Mutans Streptococci
GENERAL SCIENTIFIC PROGRAM



Dr. Richard V. Tucker

The Cast Gold Restoration In General Practice
GENERAL SCIENTIFIC PROGRAM



Prof. Isaac Van Der Waal

Symposium On Current Topics In The Diagnosis And Treatment Of Mucous Membrane Diseases: Diagnosis And Treatment Of Precancerous Lesions
GENERAL SCIENTIFIC PROGRAM

Diseases Of The Tongue: A Clinical Overview
GENERAL SCIENTIFIC PROGRAM



Dr. Stephen H.Y. Wei

Symposium On Fluorides: Fluorides What's New
GENERAL SCIENTIFIC PROGRAM



Dr. Gerald Wittenberg

Facial Imaging
GENERAL SCIENTIFIC PROGRAM



Dr. Donald Woodside

New Developments In The Diagnosis, Treatment Planning And Treatment Of Malocclusion
GENERAL SCIENTIFIC PROGRAM

Dr. L. Abraham-Impijn
Symposium On Medical Emergencies In The Dental Office – Are You Prepared? Is Trouble Coming?
GENERAL SCIENTIFIC PROGRAM

Dr. Herbert I. Bader
Root Planing And Scaling
HANDS-ON COURSE

Hand and Powered Root Instrumentation: The Heart And Soul Of Periodontal Therapy
LIVE-TELEVISION PRESENTATION

Dr. Crawford Bain
Symposium On Guided Tissue Regeneration: Absorbable vs. Nonresorbable Membranes
GENERAL SCIENTIFIC PROGRAM

Dr. Bradley Beiswanger
Symposium On Oral Research
GENERAL SCIENTIFIC PROGRAM

Prof. D. Djukanovic
Paediatric Dentistry
GENERAL SCIENTIFIC PROGRAM

Dr. Terry Donovan
Update On Esthetic Restorative Dentistry
LIMITED ATTENDANCE SESSION
Porcelain Veneering Made Easy
LIVE-TELEVISION PRESENTATION

Dr. Gilles Gauthier
Removable Partial Dentures
HANDS-ON COURSE

Dr. Wayne Halstrom
The Success Of Oral Appliances In The Treatment Of Sleep Apnea And Snoring
GENERAL SCIENTIFIC PROGRAM

Mr. Chris Johnson
You Don't Need Nitrous To Laugh In The Office
GENERAL SCIENTIFIC PROGRAM

Dr. William Killoy
Symposium On Guided Tissue Regeneration: Absorbable vs. Nonresorbable Membranes
GENERAL SCIENTIFIC PROGRAM

Dr. Claude Lamarche
Why Does Complete Denture Treatment Fail?
GENERAL SCIENTIFIC PROGRAM

Removable Partial Denture – The Future
GENERAL SCIENTIFIC PROGRAM

Removable Partial Dentures
HANDS-ON COURSE

Ms. Sandra Lopez
Balanced Living – The 90's Prescription For Stress Management
GENERAL SCIENTIFIC PROGRAM

Dr. Werner Moermann
Chairside Tooth Preparation For Veneer Onlays
LIVE-TELEVISION PRESENTATION

Dr. Domenico Morielli
Traumatic Injuries Of The Trigeminal Nerve: Causes, Diagnosis, Treatment And Prevention
GENERAL SCIENTIFIC PROGRAM

Dr. Andy Rivest
Recent Prosthetic Advances In Osseointegration Ad Modern Branemark
HANDS-ON COURSE

Dr. Bengt Rosling
Colgate Symposium
GENERAL SCIENTIFIC PROGRAM

St. John Ambulance
Cardio-Pulmonary Resuscitation
HANDS-ON COURSE

Ms. Lynn Smith
Dental Radiography Seminar
HANDS-ON COURSE

Dr. George Zarb
Prosthodontic Aspects Of Osseointegrated Implants
GENERAL SCIENTIFIC PROGRAM

... AND MORE!

FDI '94 Pre and Post Congress Tours

ALASKA (September 24 - October 1, 1994)



A memorable 7 night cruise to Alaska aboard Holland America's M.S. Westerdam. Heading up the inside passage, enjoy many delightful ports of Ketchikan (Alaska's first city), Juneau (Alaska's capital) and Glacier Bay (where the mighty glaciers will take your breath away!). A trip of a lifetime!

CANADIAN ROCKY MOUNTAINS (October 8 - 11, 1994)



See the wonders of the Canadian Rocky Mountains on this 4 day/3 night train and bus excursion. Travel through spectacular scenery during the day and enjoy comfortable hotel accommodations at night. You will see a wide variety of wildlife and natural attractions that Alberta and British Columbia have to offer; including the wonderful destinations of Jasper, Banff and Lake Louise.

HAWAII (October 7 - 14, 1994)



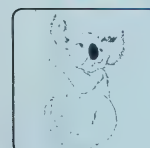
Enjoy a fabulous 8 day/7 night vacation in Hawaii on the island of Oahu. You can stay at the Hilton Hawaiian Village or at the Pacific Beach Hotel, both situated on the beautiful Waikiki beach. A perfect tour for those wishing to relax and enjoy the magnificent view of Hawaii.

LOS ANGELES (October 10 - 13, 1994)



Enjoy a marvelous 4 day/3 night cruise aboard Holland America's M.S. Westerdam from Vancouver to Los Angeles along the Canadian and U.S. coast. Since the cruise departs on October 10th, this is the perfect tour for those wishing to do some post-conference sightseeing in Vancouver.

AUSTRALIA AND NEW ZEALAND (October 7 - 21, 1994)



An incredible 15 day/14 night post-conference tour "down-under". In Australia, visit Cairns, the great Barrier Reef, the rain forests, Sydney, the Blue Mountains and go on a wine tour. In New Zealand, see the Coromandel Peninsula and Rotorua thermal springs. You will also have the opportunity to stay either on a sheep, kiwi fruit or cattle farm for two nights. Each farm will host 2 couples from our group – a sure way to enjoy local New Zealand hospitality. From here, optional stopovers for 4 days/3 nights in either Fiji or Hawaii.

For more detailed information,
contact the FDI 1994 Organizing Committee
at 1-800-267-6354 by telephone or at (613) 523-3062 by fax.

Meet the Editors

To enhance the scientific and clinical content of the *Journal*, CDA draws on the collective knowledge, experience and energy of 11 consulting and nine specialty editors. Selected because of their unique background and training, these individuals are each considered to be authorities in their respective disciplines and each has an important role to play in ensuring the accuracy and worthiness of articles published in the *Journal*.

Consulting editors act as referees and/or advisors for scientific articles, texts, book reviews, etc., and are encouraged to submit scientific articles, news items and general interest comments pertaining to their particular field of expertise. Similarly, specialty editors are expected to submit review articles on their specialty, as

well as to act as referees for scientific articles and book reviews, where appropriate.

Each of the nine dental specialties in Canada is represented by one editor on the *Journal's* masthead, and each specialty editor must be a certified member of his or her specialty society.

The *Journal* also relies heavily on the contributions of its two scientific editors, Dr. Robert Turnbull and Dr. Pierre Desautel, who are responsible for planning the scientific content of the magazine, and managing the peer review process.

As part of its 60th year of publication, the *Journal* is proud to introduce the dentists of Canada to its outstanding editors.

Introducing Nine Specialty Editors:

Prosthodontics



Michael I. MacEntee, LDS, Dip. Prosth., FRCD(C), PhD, received his degree in general dentistry from the Royal College of Surgeons in Ireland in 1969. Upon graduation, he conducted a general practice in Britain until 1971. He relocated to Canada in 1972 and served as a dental officer in the pedodontic clinic for the

Manitoba provincial dental health service. From 1972 to 1973, he also conducted a private general practice in Winnipeg.

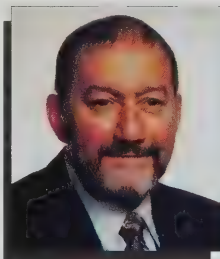
Dr. MacEntee subsequently received a diploma certificate in prosthodontics from the Medical University of South Carolina in 1975, and in that same year he was appointed to the faculty of dentistry at the University of British Columbia as an assistant professor. He has maintained a part-time specialty practice in Vancouver since 1975.

In 1983, and again in 1985, Dr. MacEntee was the visiting senior lecturer in the department of oral medicine and oral surgery, University of Bristol, England. As well, since 1986, he has been a professor and chairman of the division of prosthodontics in the department of clinical dental sciences, University of British Columbia, and has served as an examiner in prosthodontics for the Royal College of Dentists of Canada. In 1989, he received a PhD in oral epidemiology and community dentistry from Trinity College, University of Dublin, Ireland.

Dr. MacEntee is a past president of the Association

of Prosthodontists of Canada, and is currently the vice-president of the Royal College of Dentists of Canada. He has published and lectured extensively, both nationally and internationally, on many aspects of prosthodontics, including: the epidemiology of oral diseases in the aged; the management of oral disorders in an aging population; biomaterials; oral implants; and decision analysis in treatment development.

Pediatric Dentistry



J. Victor Legault, DDS, Cert. Pedo. graduated from the University of Montreal in 1962. Upon graduation, he entered into private general practice in Montreal until 1963, when he began specialty studies at the University of Rochester, New York. He subsequently received a

certificate in pedodontics in 1965, and became an assistant professor at the school of dental medicine, University of Montreal. In that same year, he started a private specialty practice in Montreal, which he maintains to this day.

Since 1978, Dr. Legault has been a clinician at the pediatric dentistry clinic at the University of Montreal, and since 1980, he has been the assistant director of Montreal's Hôpital Marie-Enfant Research Centre. As well, he has been a clinician at the pediatric dentistry clinic at McGill University since 1988, and serves as a guest lecturer at Laval University.

Dr. Legault is currently president of the Quebec Federation of Dental Specialists, and is past-president of

the Canadian Academy of Pediatric Dentistry, and the Quebec Association of Pediatric Dentists. He has contributed widely to professional and scientific literature, and has presented lectures in Paris, Jerusalem and Amsterdam.

Radiology



Robert E. Wood, DDS, M.Sc., Dip. Oral Rad. FRCD(C), received his dental degree from the University of Toronto in 1982. Upon graduation, he entered into private general practice in Toronto, and in 1986 he received his diploma in oral radiology from the University of Toronto.

From 1983 to 1986, while pursuing postgraduate studies, Dr. Wood was also a clinical instructor at the University of Toronto, and from 1985 to 1986 he lectured at Seneca College in Toronto as well. In 1986, he spent a year lecturing at the Oral and Dental Teaching Hospital, University of Stellenbosch, in Capetown, South Africa. In 1988 he returned to Toronto and entered a private specialty practice, which he maintained until 1991.

From 1991 to 1992 Dr. Wood served as the head of the department of dentistry at the North-Eastern Ontario Regional Cancer Centre in Sudbury, and he remains as a consultant to the centre. He is also a consultant to the dental clinic at Laurentian Hospital in Sudbury, to the department of otolaryngology at the Toronto Hospital, and to the office of the chief forensic pathologist of Ontario.

Dr. Wood has been an assistant professor in the department of oral radiology in the faculty of dentistry, University of Toronto, since 1992, and is a staff member of the dental clinic at the Ontario Cancer Institute/Princess Margaret Hospital in Toronto. He has published and lectured extensively both nationally and internationally.

Oral and Maxillofacial Surgery



David Stanley Precious, DDS, M.Sc., FRCD(C), graduated from Dalhousie University with a DDS in 1969 and an M.Sc. in 1972. Upon graduation, he was awarded a national health grant to conduct research in maxillofacial surgery in London, Switzerland and Austria. In 1973, he returned to Dalhousie as an

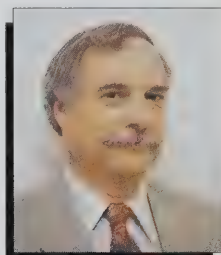
assistant professor. In 1975, he was named an associate professor, and since 1985 he has been a professor and the head of the department of oral and maxillofacial surgery at Dalhousie.

Dr. Precious is a past president of the Nova Scotia Dental Association and the Canadian Association of Oral and Maxillofacial Surgeons, and has been the chief examiner, oral and maxillofacial surgery, for the

Royal College of Dentists of Canada since 1991.

Dr. Precious sits on the editorial board of the *International Journal of Oral and Maxillofacial Surgery*, is an editorial consultant for the *Journal of Oral and Maxillofacial Surgery*, and a member of the advisory editorial board for the *British Journal of Oral and Maxillofacial Surgery*. As well, he is an external reviewer for the Medical Research Council of Canada. He has 175 publications, presentation and reviews to his credit, including six book chapters.

Endodontics



William Herbert Christie, DMD, M.S., FRCD(C), graduated from the University of Manitoba in 1964. Upon graduation, he entered into general practice with his father in Norwood, Manitoba. He practised there until 1971, and subsequently received a certificate in endodontics and a

masters of science in dentistry from Ohio State University in 1974. From 1974 to 1989, he conducted a full-time specialty practice in Winnipeg, which he now maintains on a part-time basis.

Dr. Christie has been a full-time associate professor and head of the section of endodontics, faculty of dentistry, at the University of Manitoba since 1989. He is a past-president of the Winnipeg Dental Society and the Canadian Academy of Endodontics, and is a diplomate of the American Board of Endodontics.

Dr. Christie has been the chief examiner, endodontics, for the Royal College of Dentists of Canada since 1991. He has published several articles in the field of endodontics, and has participated in lectures, continuing education courses and clinics in Canada, the U.S. and France.

Oral Pathology



James H. P. Main, BDS, PhD, FDSRCSE, FRC Path., was born in Scotland, and received a BDS and a PhD from the University of Edinburgh. Following graduation, he became a faculty member at the University of Edinburgh, and held a research fellowship at the Na-

tional Institute of Dental Research in Washington, D.C.

Dr. Main is a past-president of the Royal College of Dentists of Canada as well as the International Association of Oral Pathologists. Since 1969 he has been a professor and the head of the department of oral pathology in the faculty of dentistry at the University of Toronto. He is also head of the department of dentistry at Toronto's Sunnybrook Health Science Centre, and director of the postgraduate program in oral pathology at the University of Toronto. Dr. Main has contributed widely to the professional and scientific literature, primarily on the subject of oral cancer.

Periodontics



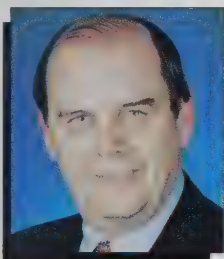
James E. Stakiw, DMD, PhD, Dip. Perio., MRCD(C), received his dental degree from the University of Manitoba in 1966, his PhD in oral biology-physiology in 1971, and his specialty certificate in periodontology in 1973.

Dr. Stakiw was appointed as associate professor of oral

biology at the University of Saskatchewan in 1968. From 1974 to 1985, he was on the full-time faculty of the division of Periodontology, University of Western Ontario, and served as chairman from 1983 to 1985. Currently, he maintains a full-time private specialty practice in periodontology in London, Ontario, while continuing to teach as a part-time clinical instructor at the faculty of dentistry, University of Western Ontario.

Dr. Stakiw is a past-president of the London and District Dental Society, and from 1987 to 1994, he served on the council of the Royal College of Dental Surgeons of Ontario. He is currently a dental officer with the 22 Service Battalion, Canadian Armed Forces Primary Reserve.

Orthodontics



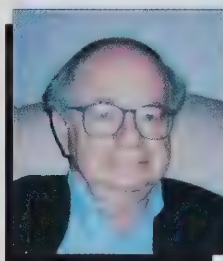
Kenneth E. Glover, B.Sc., DDS, M.Sc., MRCD(C), received his dental degree from the University of Alberta in 1962. Upon graduation, he practised general dentistry in Vermilion, Alberta, until 1967, when he moved his practice to Edmonton and began teaching part-time at the

faculty of dentistry, University of Alberta.

In 1977, Dr. Glover enrolled in the University of Washington's three-year orthodontic-pedodontic-education program. Upon completion of this program, he returned to Edmonton and was appointed chairman of the orthodontic programs at the University of Alberta's faculty of dentistry. In 1991, he was appointed department chairman, and became responsible for six dental specialties, including orthodontics.

Dr. Glover is editor of the Canadian Association of Orthodontists' *Bulletin*.

Public Health



Donald W. Lewis, DDS, DDPH, M.Sc.D, FRCD(C), is a professor and chairman of the department of community dentistry at the University of Toronto.

Dr. Lewis was the visiting professor for the Medical Research Council in 1980, 1984 and 1986. He has

served as a consultant to the governments of British Columbia, Saskatchewan, and Ontario, as well as to the City of Toronto, the National Institute for Dental Research (Bethesda, Maryland), the American Public Health Association, and the Robert Wood Johnson Foundation.

Dr. Lewis's current research interests are: dentists' variability in knowledge and practice; clinical decision-making by dentists; evidence-based dental practice; and clinical epidemiology. He has authored and co-authored about 75 publications.

Introducing 11 Consulting Editors:

Anesthesiology



Earle R. Young, B.Sc., DDS, B.Sc.D, M.Sc., FADSA received a bachelors degree in biology from Carleton University in 1969. From there he went on to the University of Western Ontario, where he received a dental degree in 1976. In 1978, he received a second bachelors degree in

dentistry, with a concentration in anesthesia, from the University of Toronto. In 1983, he received a masters degree in pharmacology from the University of Toronto.

From 1976 to 1977, Dr. Young set up a private general practice in Ottawa. From 1978 to 1982, he served as an associate in dentistry in the department of anesthesia in the faculty of dentistry, University of Toronto. In 1983 he became an assistant professor, and was appointed head of the department of anesthesia in

1990. He was awarded tenure in 1992 and appointed associate professor. As well, he has been on staff at the Wellesley Hospital in Toronto since 1986.

Dr. Young has lectured at national dental seminars, and is an advisor for Med Check Canada Ltd., ASTRA Pharmaceutical, RAE Medical Inc., and the Royal College of Dental Surgeons of Ontario. Currently, he is a consultant on several pending legal cases, and to two first aid/emergency training programs.

Among his numerous teaching awards, Dr. Young received the Bruce Hord Master Teacher Award in 1989. His biography has been requested for the *Dictionary of International Biographies*, *Men of Achievement*, and *The International Who's Who of Intellectuals*. He has been involved extensively in research, particularly in the use of anesthesia in dental practice, and has published more than 90 clinical and research articles, abstracts, book reviews and summaries on the subject of anesthesia.

Dental Materials

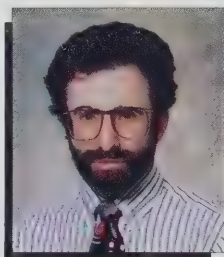


Peter T. Williams, DDS, B.A.Sc., M.S., received both a bachelors degree in metallurgy and materials science and a dental degree from the University of Toronto, as well as a masters degree from Indiana University while working under the late Dr. Ralph Phillips. He maintained a private

general practice in Milton, Ontario, from 1964 to 1966, and in 1970 he joined the faculty of dentistry, University of Manitoba.

Currently, Dr. Williams is an associate professor in the department of restorative dentistry, University of Manitoba, and the head of the dental biomaterials science section. In addition to being course coordinator of and lecturer in five courses, he is active in materials research and is the author of numerous papers in the dental materials field. He has been a member of the Canadian Standards Association's committee on dentistry since 1976, and is a member of the International Standards Organization Task Committee on dentistry as well as the CDA committee on dental materials and devices.

Infection Control



Joel B. Epstein, DMD, MSD, received his dental degree from the University of Saskatchewan in 1976, before going on to earn a certificate in oral medicine and a masters of science in dentistry from the University of Washington in Seattle in 1979.

Following graduation in 1979, Dr. Epstein returned to the University of Saskatchewan where he became an associate professor and director of the division of diagnosis in the college of dentistry and an associate member of the hospital staff at University Hospital.

In 1981, Dr. Epstein relocated to Vancouver, where he became a member of the medical/dental staff at the British Columbia Cancer Agency, and a research associate professor in the department of oral medicine, University of Washington. He also started a private referral practice in oral medicine.

Dr. Epstein has been an active staff member at the Vancouver General Hospital, and on the staff of several other hospitals in the Vancouver area since 1984. He became the head of the division of oral medicine and clinical dentistry in Vancouver General Hospital's department of dentistry in 1988, and a clinical professor in the department of oral medical and surgical sciences, faculty of dentistry, University of British Columbia, in 1989.

He is a past-president of the International Society for Oral Oncology, and has been the vice-president of the Canadian Academy of Oral Medicine since 1990. He

is also the vice-president of the medical/dental staff association of the British Columbia Cancer Agency and chairman of the international affairs committee of the American Academy of Oral Medicine.

Dr. Epstein is a certified specialist in oral medicine and is a diplomate to both the American Board of Oral Medicine and the American Academy of Pain Management. He has been a member of the editorial board for the oral medicine section of *Oral Surgery, Oral Medicine, Oral Pathology* since 1989, a special editorial consultant for *Special Care in Dentistry* since 1990, and was a reviewer for the *European Journal of Cancer Part B: Oral Oncology* in 1992. As well, from 1990 to 1991, he was a member of the international program committee, clinical sciences, for the seventh international conference on AIDS.

Dr. Epstein has published more than 150 papers, abstracts and textbook chapters in the areas of oncology, infectious disease and general areas of oral medicine.

Medicine



George K.B. Sandor, DDS, MD, FRCS(C), FRCD(C) graduated with honors from the dental faculty at the University of Toronto in 1978 and spent the following year as a general practice dental resident at Michael Reese Hospital and Medical Centre in Chicago. From 1979 to

1982, he was a resident in oral and maxillofacial surgery at the school of dentistry, University of Washington, in Seattle, and then spent one year studying at Arnhem, the Netherlands.

In 1982, Dr. Sandor returned to Toronto to study medicine, and he graduated with honors from the University of Toronto's faculty of medicine in 1986. He completed a comprehensive surgical internship in the general division of the Toronto Hospital's department of surgery in 1987, and from 1987 to 1991 he was a resident in the division of plastic surgery at the University of Toronto. He was the recipient of numerous teaching awards and distinctions throughout his residency.

In 1984, Dr. Sandor served as a visiting lecturer in the University of Washington's department of oral and maxillofacial surgery, faculty of dentistry. In 1992 he was a fellow in craniofacial and esthetic surgery in Paris, France, and Bern, Switzerland. Also in 1992, he was a visiting professor in the department of oral and maxillofacial surgery at Semmelweis Medical University in Budapest, Hungary, and this year he is a visiting professor at the University of Oulu's school of dentistry in Oulu, Finland.

Dr. Sandor was an associate in an oral and maxillofacial surgery private practice from 1983 to 1991, when he became a staff plastic surgeon at the Etobicoke General Hospital, and a staff oral and maxillofacial surgeon at Toronto's Hospital for Sick Children. He continues in both these capacities today. As well, since

1993, he has been a staff plastic surgeon at Humber Memorial Hospital in Weston, Ontario, and a staff oral and maxillofacial surgeon at Hugh MacMillan Rehabilitation Centre in Toronto, and at the Toronto General Division of the Toronto Hospital.

Dr. Sandor has been a section editor in esthetic and reconstructive surgery and a craniofacial consultant for the *International Journal of Oral and Maxillofacial Surgery* since 1993. He has published numerous articles and has participated in lectures and continuing education courses in Canada, the United States, Finland, Hungary, Australia, Latvia, the Netherlands, and Argentina.

Cosmetic Dentistry



Ken A. Neuman, DMD, graduated from the University of Manitoba in 1964, and presently maintains a general practice with an emphasis on cosmetic dentistry in Vancouver. He is also an adjunct senior instructor at Case Western Reserve University, and a clinical consultant with ExperDent Consultants. As

well, he works with Dr. Gordon Christensen as a CRA evaluator.

Dr. Neuman has earned fellowships in the Academy of General Dentistry, the Academy of Dentistry International, and the International College of Dentists. He is a past-president of the Vancouver and District Dental Society, the Vancouver Occlusal Seminar and the L. D. Pankey Study Group, has lectured extensively in North America on cosmetic dentistry and cosmetic imaging, and has contributed to numerous journals on these topics.

Practice Management



Robert A. Brandon, DDS, graduated from the University of Western Ontario in 1974 and conducted a private practice in Marathon — an underserved area in northwestern Ontario — until 1977.

Dr. Brandon is currently a member of the faculty of dentistry council at the University

of Western Ontario, and is a district representative to the council of the Royal College of Dental Surgeons of Ontario.

Dr. Brandon served as chairman of the Ontario Dental Association's (ODA) dentists at risk committee from 1986 to 1990, and since 1990 he has been a consultant to that committee. He has also served on both the ODA board of governors and executive council, as well as the CDA board of governors.

Dr. Brandon is past-president of the Ontario Health Professional Assistance Program and the London and District Dental Society. He was awarded the ODA service award in 1987. As well, he was

awarded the Governor General of Canada Volunteerism Award of Merit in 1991.

Forensic Dentistry



Robert Dorion, B.Sc., DDS, Cert. Forensic Dentistry, Dip. Am. Board of Forensic Odontology, received a bachelor of science degree from St. Francis Xavier University in Antigonish, Nova Scotia, in 1968. From there he went on to McGill University, where he received a dental degree in 1972. In that

same year, he received a certificate in forensic dentistry from the Armed Forces Institute of Pathology in Washington, D.C., and in 1976 he received a diploma in forensic dentistry from the American Board of Forensic Odontology.

Since 1972, Dr. Dorion has maintained a private general practice in Montreal. He has served both as a clinician in operative dentistry at the faculty of dentistry, University of Montreal, and as a lecturer in forensic dentistry at the faculty of dentistry, McGill University, since 1972. As well, he has been the director of forensic dentistry at Quebec's laboratory of legal medicine, Ministry of Public Security, since 1973.

Dr. Dorion is a past-president of the Canadian Society of Forensic Science, and the American Board of Forensic Odontology. He was chairman of the American Academy of Forensic Science's committee on recommended methods, odontology section, from 1976 to 1977, and has been a lecturer at the Canadian Police College (RCMP). As well, he was a consultant on forensic dentistry on investigative tests for Canada's Law Reform Commission from 1982 to 1983.

Dr. Dorion has been a member of the editorial board for the *Canadian Society of Forensic Science Journal*, has authored more than 50 articles on forensic dentistry, and has contributed to four books on forensic sciences.

Pharmacology



Helen A. Grad, B.Sc.Pharm., M.Sc.Pharm., received a bachelors of science in pharmacology from the University of Toronto in 1975, and a masters of science from the University of Toronto in 1980. She presently works as a clinical pharmacist and teaches pharmacology and therapeutics at the faculty of

dentistry, University of Toronto.

At the faculty of dentistry, University of Toronto, Ms. Grad has been a member of the pharmacy and therapeutics advisory committee since 1980, and of the infection control advisory committee since 1988. Also since 1988, she has been a consultant to the Ontario College of Pharmacists' Drug Information Centre.

Ms. Grad has published articles and presented numerous continuing education lectures relating to pharmacology and dental therapeutics. She is a member of several professional associations, including the Canadian Pharmacists' Association, the Canadian Biomaterials Society, the International Association for Dental Research, and the New York Academy of Sciences.

The Canadian Dental Assistants' Association



Charlotte Peer-Miller became a self-employed training consultant to the dental profession upon completion of an adult education program offered by St. Francis Xavier University in Antigonish, Nova Scotia. She specializes in automation and dental reception education, focusing on communication and motivation.

As a career dental assistant/receptionist, Ms. Peer-Miller has achieved a number of career-related goals. In 1991, she became the 41st elected president of the Ontario Dental Nurses' and Assistants' Association, and in 1984, she was the founding member of the Burlington Affiliated Association of the Ontario Dental Nurses' and Assistants' Association. As well, she is the founding chair of the Committee of Ontario Certified Dental Receptionists, and co-designer of the Ontario Dental Nurses' and Assistants' Association's network for career enhancement.

Ms. Peer-Miller is currently vice-president and membership services chair of the Canadian Dental Assistants' Association, and editor of their journal.

Nutrition



Nina Burgess, B.Sc., M.Ed. is a graduate of McGill University and the University of Toronto. Before joining the preventive department at the University of Toronto, she taught in high schools in Quebec, British Columbia and Ontario.

Currently, Ms. Burgess is the nutrition consultant for the University of Toronto's faculty of dentistry, and is involved in the promotion of better counselling skills to improve communication between dental professionals and their patients.

As well, she coordinates preventive outings, which are conducted by the dental students at the University of Toronto, and helps students to develop materials that promote good dental care and nutrition.

The Canadian Dental Hygienists' Association



Carol Matheson Worobey, graduated from the School of Dental Hygiene, University of Manitoba, in 1966. She has worked as a dental hygienist both in private practice and in public health. As well, she has been involved in the dental assisting program at the Kelsey Institute in Saskatchewan and, in Winnipeg, at the Red River Community College and Tec-Voc School.

Ms. Worobey is a past-president of the Saskatchewan Dental Hygienists' Association as well as the Canadian Dental Hygienists' Association, and has been the executive director of the Canadian Dental Hygienists' Association since 1983.

Introducing Two Scientific Editors:

Scientific Editor, French section



Pierre Desautels, DDS, MSD, is a professor in the faculty of dental medicine, University of Montreal, and chair of their restorative dentistry department. His primary interests are in the area of dental materials and operative dentistry.

Scientific Editor, English section



Robert S. Turnbull, DDS, Dip. Perio., MRCD(C) received his first dental degree from the University of Toronto in 1966. Upon graduation, he entered into a full-time general private practice in Mississauga, Ontario, until 1969. He subsequently received his specialty diploma in periodontics from the University of Toronto in 1971, and a M.Sc.D. in 1972. He then began a part-time specialty practice in Toronto, which he maintains to this day.

With the University of Toronto's faculty of dentistry, Dr. Turnbull is currently an associate professor in the department of periodontics engaged in research and teaching. He served as acting chairman of the department from 1991 to 1992.

Dr. Turnbull is a past-president of the Ontario Society of Periodontics, and since 1986, he has been a specialty consultant with the Royal College of Dental Surgeons of Ontario. ■

ANATOMY OF
A JOURNAL

60

YEARS OF
PUBLICATION

From the Mind to the Printed Page — A *Journal* Article's Journey

P. Ralph Crawford, BA, DMD

I'm a dental article, and I want to tell you the story of how I made it into the pages the *Journal of the Canadian Dental Association (JCDA)*. Like all journeys, mine has highs and lows — from the excitement of the planning stage to the frustrations of detours and the possible exasperation of cancellation.

But let me start at the beginning. My voyage was originally conceived in the mind of a dentist — my boss — who had worked on my particular topic for a couple of years. At this point, the boss felt that his (or her) knowledge of my topic was complete enough to share with other dentists.

Incidentally, my boss is a Canadian dentist. Most of the articles published in the *Journal* are conceived and written by Canadians, because the *JCDA* is, after all, "the authoritative written voice of dentistry in Canada," and it encourages Canadian material. However, this is not a hard and fast rule, written in a granite rule book. Depending on the topic and worthiness of the submission, the *Journal* will consider any dental article for publication, regardless of its country of origin.

In my case, my boss went one step further, by ensuring that I was written in the proper format for publication in the *JCDA* — he followed the *Journal's* Instructions For Contributors. When I was complete, he submitted three copies of me to the editor.

Once I'd made it to the editor's desk, he had first "kick" at my contents to determine if I fell within the



The Journal of the Canadian Dental Association rolls off the press.

Journal's scope and if, based on my topic and the interest it would have for the *JCDA's* readers, I was suitable for publication in the magazine.

Having met with the editor's approval, after I was catalogued and recorded, two copies of me were sent to Dr. Robert Turnbull in Toronto, one of the *Journal's* two scientific editors. Dr. Turnbull is the *Journal's* English scientific editor. French-language articles are sent to the *Journal's* French scientific editor, Dr. Pierre Desautels. Scientific articles are published in the official language of Canada — French or English — in which they were submitted.

From Dr. Turnbull's office, one copy of me was sent to a reviewer with special expertise in my particular topic. The *Journal's* scientific editors have a list of experts

from each dental field and specialty who willingly spend hours reading manuscripts to determine their accuracy, originality and clarity. In my case, I was shipped clear across the country to a reviewer in Vancouver.

What can I say about my reviewer — she was tough but fair. She went over my contents carefully, and generally agreed with what my boss had to say, but had some suggestions on how certain paragraphs and phrases could be revised for clarity. I guess I am one of the lucky articles. I am told that more than 30 per cent of the articles submitted to the *Journal* never make it to the printing stage, because they just look away, they do not meet the magazine's scope or standards, or are rejected in the review stage.

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Almost 90 per cent of the *Journal's* readers are general practitioners. As a result, some articles are rejected by the editor because they are better suited for specialized journals, and would not be of interest to the majority of the *JCDA's* readers. I am also aware that articles discussing a clinical "hands-on" aspect of dentistry are more eagerly read than those with a research theme, but I suppose that this is only natural when so many of the *Journal's* subscribers are in general private practice.

Once I'd passed the reviewer stage, and my publication date was set, I was edited by the *Journal's* managing editor for grammar, syntax and style. To ensure that the style used in the *Journal* is consistent, the magazine's editorial staff use *The Canadian Press Stylebook*. (One example of this consistency is that every time the designations DDS or DMD appear in the *Journal*, they are printed with no periods between the letters.)

After final editing, I was passed on to the Coordinator, Production and Desktop Services to be typeset and designed on the *Journal's* desktop publishing system. Once that process was complete, and I'd been carefully proofread, I was faxed to my boss to ensure that he agreed with any copy changes made during the editing process, and that my final text met with his approval. Editing and proofing are important. I'm told that before I appeared in print I was read seven times by five pairs of eyes. Perhaps that's why errors occur so rarely in the *Journal*, and why they are so glaringly obvious when they do occur.

It took almost a year for me to complete my voyage, from the day my boss submitted me to the *Journal* for publication, as an initial original manuscript, to the day I finally rolled off the press. You'll find me in this edition of the *Journal*. I hope all my readers enjoy my intellectual content as much as I enjoyed the journey from my boss's mind to your office. ■



Journal staff members, from left to right: Dr. P. Ralph Crawford, editor; Antonia Papadakou, writer/assistant editor; Michelle Walters, writer/assistant editor; Linda Teteruck (seated), director of communications; Rachel Galipeau, circulation secretary; Terence Davis, managing editor.

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	May 31, 1994	April 30, 1994	
Bond & Mortgage Fund	10.98293	11.07863	4.0%
Common Stock Fund	23.72357	23.41151	13.0%
Money Market Fund	66.87804	66.60896	3.7%
Balanced Fund	42.35626	42.44006	7.5%
Aggressive Fund	9.68792	9.74685	N/A
G.I.C. Fund			
Term	May 31, 1994	April 30, 1994	
1 yr	6.25%	6.00%	
2 yr	6.95%	6.40%	
3 yr	7.20%	6.80%	
4 yr	7.40%	7.10%	
5 yr	7.85%	7.65%	

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of:

May 31, 1994	April 30, 1994
\$190,094,075.00	\$190,253,157.00

For further information:



CDSPI

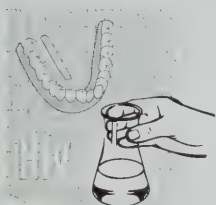
Write:

CDSPI
Retirement Services Dept.
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1-416-296-8920 Fax.

FEATURE



The Roots of Dentistry in Ancient China

Yinghua Xu, DDS

Michael I. MacEntee, PhD, LDS(I), Dip. Prosth., FRCD (C)

ABSTRACT

The history of dentistry in China is closely aligned with the remarkable developments in Chinese medicine over at least six millennia. Rudimentary dental extractions were performed as early as 6000 BC, when the first signs of adornment with human teeth were described. There were actually four distinct periods of medical development in China: the Mystical Period; the Golden Period; the Controversial Period; and the Transitional Period. The Golden Period was marked by the appearance of the first textbooks to describe preventive and restorative dental techniques, as well as the first colleges. Dentistry then moved through the dark times of the Controversial Period, when war mongering stymied progress. Lasting until 1800 AD, it came to an end with the domination of Western medicine and dentistry. This paper chronicles the development of dentistry in China, revealing that it has been a part of Chinese life for a long time.

SOMMAIRE

En Chine, l'histoire de la dentisterie est étroitement mêlée à celle

de la médecine qui, pendant plus de six millénaires, a connu des progrès remarquables. Déjà il y a six mille ans avant notre ère, on y faisait des extractions élémentaires alors que l'on commençait à se parer de dents humaines. Dans l'histoire de la médecine chinoise, on distingue quatre âges: l'âge mystique, l'âge d'or, l'âge des controverses et l'âge de transition. L'âge d'or a vu paraître les premiers manuels décrivant des techniques de prévention et de restauration dentaires ainsi que les premiers collèges. Puis vint la sombre période des controverses au cours de laquelle le bellicisme a enrayé le progrès. Cette période a duré jusqu'en 1800 et a pris fin avec la domination de la médecine et de la dentisterie occidentales. Cet article retrace les progrès de la dentisterie en Chine, découvrant qu'elle y fait partie de la vie depuis longtemps.

Skulls uncovered in the Valley of the Yellow River, where some of the earliest signs of Chinese civilization have been found, suggest that the inhabitants of the region used human teeth for personal adornment. In fact, instructions for extracting teeth have been found dating back to China's

New Stoneware Period (6000-5000 BC).¹ Tying a tooth to a bowstring before releasing the string was one of the more exotic methods recommended, presumably for teeth with advanced periodontal disease.

Four periods of medical and dental development in China have been described: the Mystical Period (2697 - 1122 BC), the Golden Period (1121 BC - 960 AD), the Controversial Period (961 - 1800 AD), and the Transitional Period (1800 - onward).²

The Mystical Period (2697 - 1122 BC)

The great contributors to classical Chinese medicine appeared somewhere around 3000 BC. Fu Hsi, for example, introduced the pulse as a measure of health in 2953 BC, and Shen Nung, in 2838 BC, catalogued a large variety of medicinal herbs. But the most famous physician of this ancient period was probably Huang Ti, who laid down the foundations of Chinese medicine in his book *Nei Jing* (The Yellow Emperor's Canon of Internal Medicine), written about 2698 BC.³ Among other achievements, he is credited with the systematic method of diagnosis. He also proposed that pain results from an imbalance of body temperature, and drew associations between

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oral and systemic diseases. Importantly, he focused more keenly on the mouth, by drawing attention to the relationship in speech between the lips and the dentition, as well as to the role of the tongue and pharynx in swallowing. In fact, Huang Ti identified mucosal inflammation (fong ya), periodontal disease (ya kam) and caries (chong ya), and had the insight to connect calculus and inflammation with periodontal disease and tooth mobility. He may even have been the first "restorative" dentist, by advocating particles of deer horn as a dressing for cavities.

While medical and dental science have moved on, Huang Ti's fame will continue endearingly, no doubt, through some of the other therapies he prescribed, such as massage, enemas and graded exercise — all of which are as fashionable today as they likely were 5,000 years ago. Moreover, he set the stage for the modern spa, by promoting hot springs and mountain sanatoria combined with mineral and organic medicaments.

The Golden Period (1121 BC - 960 AD)

This was the most prestigious age in Chinese history, the age of Confucius, Mencius and the famous surgeon Hua Tuo. It was a time when the doctrine of the five elements — metal, wood, water, fire and earth — evolved, along with the belief in the Yin and the Yang.

During the later Han Dynasty (25 - 220 AD), near the end of the Golden Period, Hua Shou contributed substantially to the art of medical diagnosis by drawing attention to the white spots that appear on the oral mucosa at the onset of measles.⁴

The tongue, in particular, has played a central role as a diagnostic indicator for many systemic disorders in traditional Chinese medicine. This was described in *Nei Jing*, and both *Shang Han Lun* (Treatise on Fevers) and *Jing Kuei Yao Lue* (Compendium of the Golden Cabinet), written by Zhang Zhong-jing about 200 AD. These texts describe an eye-mouth-genital disorder. This disorder is similar

to Bechet syndrome, which was not identified in the Western literature until 1937.¹

The first dental text, *Ko-qiong Yu Yachi* (The Mouth and Teeth), was written around 160 AD by Zhang Zhong Jing. A few years later (223 - 263 AD), Yeo Kan described dental fluorosis among the residents of Shan Xi in the northwest mountains of China, where fluoride mottling is rampant.¹

China's first medical school was established at Changan in 443 AD to provide instruction in medicine; surgery; pediatrics; ears-eyes-teeth; and physical therapy.⁵ By the start of the Tang Dynasty (619 - 907 AD), however, dentistry was acknowledged as one of the 13 branches of medicine in its own right.²

Chou Yuan-Fang, in a book entitled *Zhu Bing Yuan Huo Zong Lun* (The Sources of Diseases), written in 610 AD, catalogued nearly 2,000 human disorders, including caries, gingivitis, periodontitis, dental abscesses, bruxism, dental fluorosis, angular chilitis, glossitis, cleft lip and halitosis.⁶ During the seventh century AD, Suen Si-Miao offered advice on oral diseases and remedies for disorders of the tongue, lips, teeth and joints.⁷ An earlier record, discovered in a tomb from the Han Dynasty (25 - 220 AD), named 52 remedies with more than 280 prescriptions for a large variety of general disorders, including moxibustion — the application of heated herbal sticks — to cure toothache.⁸

Zhang Zhong-jing advocated arsenic as a remedy for toothache.¹ The arsenic was used both to treat caries and to stop toothache by killing the pulp. Huang Fu-mi (215 - 282 AD) recorded 31 acupuncture approaches for the treatment of toothache. For example, the pain caused by cavities was resolved by inserting needles into the hand and foot (yang ming jing), pain in a lower tooth was eased by placing needles in the hand between the thumb and index finger (he gu), whereas pain in an upper tooth was managed by acupuncture in the side of the nose (ying xiang).

The Chinese also had a remedy for tooth cavities that consisted of grinding the bark of an elm tree into a powder and mixing it with water and herbs to produce a filling material.¹ Su Kung's⁹ 659 AD *Materia Medica* referred to a silver amalgam paste for filling teeth. According to Liu Wen-t'ao (1505 AD) and Li Shih-chen (1578 AD), in the Ming Dynasty this mixture consisted of 100 parts of mercury to 45 parts of silver and 900 parts of tin, triturated to produce a paste.⁴ Other "dental physicians" inserted pellets of saltpetre and garlic into the ear, or into the left nostril of women and the right nostril of men, as a remedy for toothache, inflamed gingiva and abscesses.¹⁰

One of the earliest records of repair to a cleft lip appeared during the Eastern Jin (or Chin) Dynasty (317 - 420 AD). According to the historical annals of this period,¹¹ a young man named Wei Yang-Chi was born in the province of Hupeh to a poor farming family. He was a virtuous young man, but he was disfigured severely by a hair-lip (t'u ch'ueh), and the governor referred him to the local surgeon for treatment. The surgeon advised him that he would have to eat only thin gruel and to refrain from smiling or talking for 100 days after the operation. As Boo-Chai¹³ points-out, the 100-day postoperative period is significant, as it is equivalent to the three months generally acknowledged today as the time required for a scar to harden.

Wei Yang-Chi agreed to the operation, and the surgeon cut along the edges of the cleft and sutured them together again to correct the misalignment. The results of the surgery and Wei's cheerful compliance with the surgeon's instructions launched a long political career that ultimately saw this young man become governor of no less than six Chinese provinces.

Chinese people were concerned not only about outward appearances, but also about oral hygiene. A poem from the third century BC, quoted by Proskauer,¹² refers evocatively to the significance of oral hygiene in the daily rituals of a Chinese lady:

Prepare little maid,



For your beneficent mistress
The instrument of the toilet.
Prepare her wash-bowl
of blue porcelain,
Her towel of yellow wool,
The toothbrush of green jade,
And the tooth-powder whiter
than snow.

Then, after she is cleaned
and perfumed,
Make reverently the morning
salutation.

"Prescriptions for the Fair"
(272 BC)

Proskauer suggests that "The toothbrush of green jade" mentioned in the poem was probably a jade-handled wooden toothstick, much like the sticks used in China today. Silver toothpicks have been discovered from the tombs of the Three Kingdom Dynasty (220 - 280 AD). The Dun wall paintings, discovered in the northwest of China, and dating from 366 AD, show people brushing their teeth.¹ Sometime during the Tang Dynasty, most people began to brush their teeth and to use saline mouthwashes.¹⁵ They surmised that the infestation of worms that caused caries could be prevented by removing food debris from the mouth after eating.^{7,13} A few centuries later, Chen An-Shong (1137 - 1213 AD) described various methods for cleaning teeth with willow branches, cloths, toothbrushes, herbs and powders.¹

Marco Polo apparently brought back a toothbrush with bristles from China in 1295 AD. Fields,¹⁰ after discovering a woodcut — dated June 25, 1498 — of a toothbrush in a Chinese encyclopedia published in 1609, suggested that the modern toothbrush with bristles standing at right angles to the handle did indeed originate in China.

This was the most splendid era of Chinese history. The great classics of medicine were written. The doctrine of the Yin and Yang was introduced. Anesthesia was offered for complex surgery, including repair of a cleft lip, and the diagnostic value of the tongue was described. The toothbrush, as it is used today, also originated in this period, and the preventive and therapeutic benefits of oral hygiene were promoted. Remedies for treating tooth-

ache with acupuncture, herbs and fillings, as well as treatments for intraoral inflammations, were introduced, and it seems that attempts were also made to construct false teeth.

The Controversial Period (961 - 1800 AD)

The period when Manchus occupied China was an era of stagnation and decline in the arts and sciences, as well as in medical and dental practice. Still, sometime between 1275 - 1292, when Marco Polo visited the province of Kardandan, a part of Yunan province in southern China, he observed that the population used gold, with precision, to cover and shape their teeth.¹⁴

According to Ring,⁴ Chinese surgeons maintained their interest in diseases of the mouth and throat during this period, and by the seventeenth century they had developed special instruments for operating in the mouth. However, as China opened up to foreign traders and missionaries, the intrusion of Western dentistry and medicine began. By the early part of this century, "tooth fitters" used complete and partial dentures made from gold to replace missing teeth, and cement, gutta percha or amalgam¹⁵ to fill tooth cavities.

The Transitional Period (1801 - Onwards)

In his travel book on China, written during the last century, S.W. Williams, indicated that "operations are confined, for the most part, to removing a tooth, puncturing sores and tumors with needles, or trying to reduce dislocations and reunite fractures by pressure or bandaging."¹⁶ However, he also wrote that Chinese surgeons sometimes "successfully execute more difficult cases, as the amputation of a finger, operation for a hair-lip, and insertion of false teeth," and explained how four incisor teeth were placed with substitutes of ivory tied to the eye teeth with a piece of catgut and replaced every few months.

Finally, during this last period, indigenous medico-dental practices were modified to accommo-

date Western techniques and beliefs, although it was not until the middle of this century that the methods of the ancient Chinese dentists, tooth removers, tooth-worm removers, tooth fitters and tooth cleaners (as they were known in various parts of the country) ceased to operate. Today, even in the rural districts of the interior provinces, the Western ways prevail.

The Western dentists who had a significant influence on the introduction of modern dentistry into China were Anderson from Yale, Yates from Harvard, Halliday from Columbia, and Thompson, Lindsay, Agnew, Mullett and Campbell from Canada. In 1915, Lindsay established the first dental school in China as part of the Western China Union University, located in Chengdu. The dental school joined with the school of medicine in 1929 to form the College of Medicine and Dentistry. Graduates were granted the DDS degree after seven years of study and, over the years, many of them have played a central role in establishing the 30 or more Western-style dental schools that exist in China today.

Tu¹⁷ states that "the development of the dental art in ancient China is made more fascinating in light of its almost total isolation from Western influence. A striking aspect of this development has been some of its similarities with the Western dental art." Perhaps it is time to look again more carefully at some of the old developments. ■

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A Study Of Factors Affecting Dental Expenditures In Quebec: 1962-1991

John P. O'Keefe, M.Dent.Sc., MBA

Alan Hochstein, PhD

ABSTRACT

The issue of dental manpower planning has received considerable attention in Quebec in recent years. Quebec dentists agree that there is a need for detailed information regarding the impact of economic factors on the supply of and demand for dental care in the province.

This study examines the impact of economic factors on dental care expenditures in Quebec between 1962 and 1991. The functional form of the econometric model used by the authors is similar to the one used in a study of the growth of the U.S. dental sector between 1950 and 1989.¹² The dependent variable is per capita dental expenditure, and the three independent variables are: dentist/population ratio, per capita personal disposable income; and percentage of the population with dental insurance coverage. All data come from secondary sources.

The findings indicate that per capita dental expenditure has grown substantially in Quebec over the past three decades, with the rate of growth slowing dramatically during the 1980s. Dental insurance coverage, the number of dentists in the community and the disposable income of the population all have a positive impact on dental expenditure in Quebec. However, it is clear that the in-

comes of Quebec dentists may decrease in the future if: no restrictions are placed on the number of new dental graduates entering the profession; dental insurance programs are curtailed; or dental disease levels continue to fall.

SOMMAIRE

Au cours des dernières années, la planification des ressources humaines en dentisterie est une question dont, au Québec, on s'est beaucoup préoccupé. Les dentistes québécois sont d'avis qu'on a besoin de données précises touchant les conséquences de l'économie sur l'offre et la demande en dentisterie.

Dans cette étude, on examine cette question pour les années 1962 à 1991 au Québec. Pour ce faire, on a emprunté les critères pratiques du modèle économétrique utilisé aux États-Unis pour déterminer la croissance du secteur dentaire de 1950 à 1989.¹² Les dépenses en soins dentaires per capita constituent la variable dépendante, et il y a trois variables indépendantes: le ratio dentiste/population, le revenu net per capita et le pourcentage de la population jouissant d'un régime d'assurance dentaire. Toutes les données proviennent de sources secondaires.

On a découvert que, au cours des trois dernières décennies, les

dépenses en soins dentaires ont beaucoup augmenté au Québec, le taux de croissance baissant de façon spectaculaire durant les années 1980. Les régimes d'assurance dentaire, le nombre des dentistes dans une région donnée et le revenu net des gens sont tous des facteurs qui favorisent la demande. Cependant, il est évident que les revenus des dentistes québécois pourront diminuer à l'avenir: si on ne contingente pas les diplômés en dentisterie, si les régimes d'assurance dentaire sont réduits, ou si le nombre des maladies dentaires continuent à diminuer.

Introduction

Quebec's dental care sector has undergone some major changes in the past 30 years. The number of practising dentists virtually doubled between 1962 and 1989, increasing from 1,632 to 3,155.¹ Caries levels among children declined dramatically between 1977 and 1989, as the DMFT for 13-year-olds decreased by almost half, from 8.5 to 4.2.² Government dental treatment programs were instituted for children and welfare recipients during the 1970s, although, following an initial period of expansion, these programs were subsequently cut back.

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Expansion and contraction is also evident in the area of dental education. Laval University opened a new dental school in 1972. But in 1991, McGill University threatened to close its dental school, based in part on a belief that there was a surplus of dentists in Quebec.³ This belief was also reflected in the results of a 1989 survey of dentists conducted by the Ordre des dentistes du Québec⁴ (ODQ). Many dentists stated that they had an insufficient number of patients, and 76 per cent believed the number of students entering dental school should be further reduced. But despite the general recognition of the current oversupply of dentists in Quebec, the planned closure of McGill's dental faculty was subsequently overturned in the wake of public and faculty protest.

In response to the turmoil affecting the dental profession, Brodeur et al⁵ and the ODQ⁴ identified the need for detailed studies of all factors affecting the supply of and demand for dental services in Quebec. The present study is an attempt to examine some of these factors, although the task of examining dental markets is not without difficulties.

Like other health care sectors, the dental sector may not always act as a typical market in the economic sense. An economic or free market is based on the assumption of consumer sovereignty, where informed consumers demand goods and services based on their preferences, subject to given price and income constraints. In such a market, equilibrium is reached when the quantity demanded and the quantity supplied are in perfect balance at a certain price. In the dental market, however, the consumer has imperfect knowledge about his or her dental care needs, or the "value for money" of services received. These factors contrive to negate the concept of consumer sovereignty. Furthermore, partly because of the consumer's lack of information and partly because of the dental practitioner's multiple roles as agent for the client, provider of care, and entrepreneur, there is an opportunity and an eco-

Dental Expenditure (1986 \$)

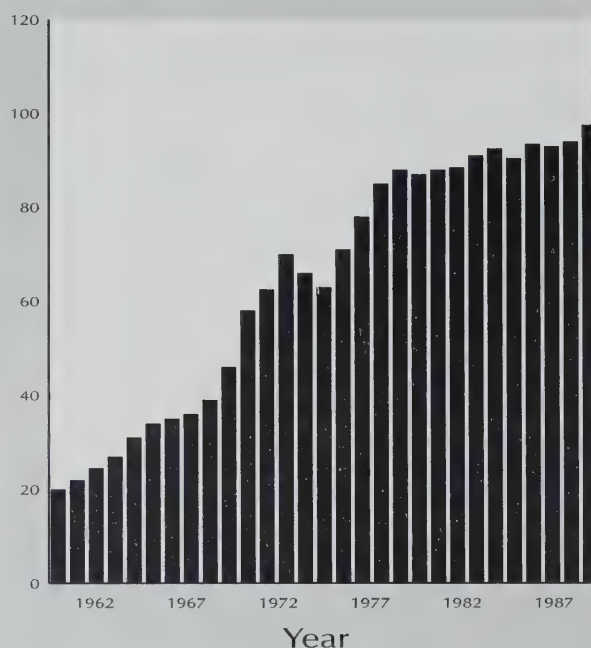


Fig. 1: Real aggregate dental expenditure per capita in Quebec (1962-1991). Levels of expenditure are expressed in terms of 1986 dollars.

nomie incentive for the supplier to induce demand. Birch⁶ and Grytten⁷ both provide evidence that supplier-induced demand does indeed exist in dentistry. Because of this overlap of supply and demand factors, the concept of separate supply and demand functions, central to neo-classical economic theory, may not be applicable to the dental market.

The need for dental care, as defined by the dental practitioner, may differ substantially from the consumer's effective demand for care, which is comprised of the patient's perceived need for care and his or her willingness to pay for it. According to Goodman and Weyant, manpower projection models based on either concept may be useful to planners.⁸ McDermott believes that demand-based models should be given preference, because they best reflect what actually occurs in the dental market.⁹

Another practical problem with studies in this field arises because most dentists are in solo practice, and the collection of data for the creation of economic models is costly and difficult. Consequently, there are large gaps in the information essential to the model-building exercise.¹⁰

Despite these problems, some researchers have attempted to study the factors that affect the operation of dental care markets, particularly in the United States. Feldstein and Roehrig produced an econometric model of the American dental care sector that endeavors to isolate the interrelationships between supply and demand issues.¹¹ More recently, Cordes and Doherty¹² used econometric techniques to examine the importance of economic variables, namely the presence of dental insurance, the income level of the population, and the supply of dentists, on dental expenditures in the U.S. They found that dental insurance is the

TABLE I

Real Aggregate Dental Expenditure Per Capita, The Number Of Dentists Per 100,000 Population, Real Per Capita Personal Disposable Income, The Percentage Of The Population With Dental Insurance Coverage For Quebec (1962-1991).

Year	Expenditure (dollars)	Dentists (number)	Income (dollars)	Insurance (per cent)
1991	97.66	48.6	13,125.05	41.7
1990	94.66	48.0	13,125.05	42.7
1989	93.64	47.2	13,076.81	42.2
1988	93.90	46.6	12,689.03	43.1
1987	91.65	45.9	12,401.07	38.6
1986	93.30	43.8	12,115.81	40.7
1985	92.19	43.9	12,166.54	39.5
1984	91.71	42.9	11,915.82	38.1
1983	88.73	42.3	11,507.82	37.9
1982	88.24	41.1	11,586.17	35.5
1981	87.45	40.2	11,779.97	36.3
1980	87.92	38.8	11,762.33	35.3
1979	85.25	37.4	11,507.78	31.5
1978	78.24	36.2	10,448.70	28.9
1977	70.30	34.9	11,103.14	25.6
1976	62.54	32.4	11,048.64	12.1
1975	65.83	32.1	10,016.91	9.7
1974	69.62	31.2	9,728.18	8.7
1973	61.79	28.6	8,945.60	1.1
1972	57.55	28.5	8,410.60	1.4
1971	44.92	28.1	7,803.94	0.3
1970	39.74	27.1	7,405.00	0.1
1969	35.52	27.4	7,350.61	0.03
1968	34.58	26.9	7,120.98	0.0
1967	33.68	26.1	7,072.25	0.0
1966	30.35	25.9	6,825.00	0.0
1965	27.02	25.8	6,652.67	0.0
1964	23.70	25.5	6,299.96	0.0
1963	21.77	25.5	6,042.48	0.0
1962	19.80	25.9	5,921.18	0.0

Dollar amounts are expressed in 1986 Canadian dollars.

dominant factor in terms of its impact on the level of expenditure. North of the border, Leake¹³ has tracked the level of expenditure on dental care in Canadian provinces and territories for the period between 1960 and 1980. Without the help of econometric techniques, he also hypothesised that the major

factors contributing to the increase in dental expenditures, over time, are the presence of dental insurance, the income level of the population and the supply of dentists.

Following in the steps of previous research, this study will examine the pattern of dental expenditures in Quebec over a 30-year

period, from 1962 to 1991, and test Leake's hypothesis about the importance of dental insurance, personal income and the supply of dentists on the level of expenditure. It will also examine the relative importance of these three variables in the Quebec context, and endeavor to forecast their future im-

TABLE II

Ordinary Least Squares Estimates Of Factors Affecting Demand For Dental Care In Quebec (1962-1991). Real dental expenditure per capita is the dependent variable.

	Constant	Dentists	Income	Insurance
Coefficient	1.291	1.154	0.00231	2.192
t statistic		2.465	1.142	5.813
p value		0.021	0.264	0.0001

$R^2 = 0.908$

$F = 85.42$ ($p < 0.0001$)

$n = 30$

D. W. = 1.542

pact on the Quebec dental profession.

Methods

All data used to create this study's multiple regression model came from secondary data sources. Data relating to dental expenditure are aggregates of: estimated "out-of-pocket" private spending,¹⁴ payments to dentists by private insurance companies,¹⁵ and payments to dentists from the Quebec health insurance fund.¹⁶ Data on the number of dentists in private practice in Quebec are derived from two sources.^{1,17} The per-capita disposable income of Quebecers is determined from provincial income and expenditure accounts,¹⁸ while estimates of the percentage of the population with dental insurance are derived from private¹⁵ and public¹⁶ sources. All money variables are expressed in terms of 1986 constant dollars. This conversion was performed using the consumer price index.¹⁹ Annual estimates of Quebec's population come from various editions of the *Bank of Canada Review*.²⁰

Because of gaps in the data relating to out-of-pocket dental expenditures in Quebec, a number of assumptions had to be made to allow construction of the model. These assumptions are outlined in the appendix, and were subjected to sensitivity analysis to test their robustness.

Following the method of Cordes and Doherty,¹² we created a multiple linear regression model to examine the relationship between the dependent variable and each of the three independent variables. Our

findings show that, in Quebec, the variables "dental expenditure" and "percentage of the population with dental insurance" are not linearly related. Because of this, the equation to be tested required a transformation into a semi-logarithmic form. The functional form of the equation is:

$$Y = a + b_1P + b_2I + b_3\ln D,$$

where,

Y = real per capita gross dental expenditure;

a = the intercept;

P = the number of private practice dentists per 100,000 population;

I = the per capita personal disposable income of Quebecers;

D = the percentage of the population with either private or public dental insurance; and

b_i = the parameters of the function to be tested.

When the regression equation was initially run, we found a very low value for the Durbin-Watson statistic (0.936). This suggested that we were experiencing difficulty with serial correlation and that a correction was required. Serial correlation is a common problem with time series data, as the value of a particular variable at time " t " may be closely related to the variable at time " $t-1$." Unless this situation is corrected, the results are unreliable and standard statistical tests are inappropriate. Fortunately, there are statistical methods available to help solve problems of this sort. In

this study, the data were corrected using the Theil-Nagar procedure.

Results

The data matrix is shown in **Table I**. Dental expenditure per capita rose from less than \$20 in 1962 to almost \$100 in 1991. The period of most dramatic growth was the decade of the 1970s. Relatively speaking, the rate of growth in expenditure during the 1980s was very slow. This change is graphically represented in **Fig. 1**.

Over three decades beginning in 1962, the dentist to population ratio in Quebec almost doubled, increasing from 25 to 48 dentists per 100,000 population. Per-capita personal disposable income also rose during this period, from \$5,921 to \$13,125, but the 1980s were the decade of slowest growth.

Similarly, the percentage of the population with dental insurance rose from virtually zero in 1968 to just over 40 per cent in 1991. It is interesting to note that over 50 per cent of dental insurance coverage in Quebec is provided by government dental plans for children and welfare beneficiaries.

Table II presents the parameter values of the equation variables for Quebec between 1962 and 1991. These multiple regression equation results incorporate the correction for serial correlation.

All the signs for the coefficients are positive, as expected. Consequently, we anticipate that dental expenditure will increase when the number of dentists per 100,000 population increases, when the average income of the population

TABLE III

Ordinary Least Squares Estimates Of Factors Affecting Demand For Dental Care. A Comparison Of The Quebec (1962-1991) And The U.S. (1950-1989) Dental Sectors. Real dental expenditure per capita is the dependent variable.

	Constant	Dentists	Income	Insurance
Quebec	1.291	1.154*	0.0023	2.192***
U.S.	-19.889	1.153*	0.00137	7.664*

* $p < 0.05$

*** $p < 0.001$

risers, and when more people have dental insurance coverage.

The R^2 indicates that about 91 per cent of the variation in real per-capita dental expenditure can be explained by the number of dentists, average income, and dental insurance coverage. Although the income coefficient is positive, the low value of the t-statistic (1.142) prevents us from being very confident, in the statistical sense, that its impact is different from zero.

The coefficients for the variables "dentists per 100,000 population" and "dental insurance" are statistically significant. For every extra dentist per 100,000 population, dental spending can be expected to increase by \$1.15 per person. In addition, when all other factors are held constant, if there is a one per cent increase in the percentage of the population with dental insurance coverage, per capita dental expenditure in Quebec can be expected to increase by \$2.19.

Table III presents the coefficients of the equation for the Quebec dental sector, along with the coefficients of the equation for real gross dental expenditures in the American dental sector between 1950 and 1989, as presented by Cordes and Doherty.¹²

The signs for all of the coefficients are also positive in the U.S. equation. Furthermore, the coefficients for "dentists per 100,000 population" and for "income" are virtually of the same magnitude in Quebec and the U.S. In both cases, the coefficient for "number of dentists" and "insurance coverage" are statistically significant (at the five per cent level), while the coef-

ficient "income" is insignificant in both equations.

Interestingly, the magnitude of the "insurance coverage" coefficient is almost four times greater in the U.S. than it is in Quebec. Evidently the existence of dental insurance has a greater impact on increasing dental expenditure south of the border.

Discussion

The rise in personal dental expenditure in Quebec has slowed dramatically since the beginning of the 1980s. This confirms the pattern observed in the U.S., where the rate of expenditure growth slowed markedly after 1978.²² In Quebec, this trend may be partly explained by the fact that the rapid expansion of rural dental practices witnessed in the 1970s and early 1980s has probably reached its peak. As a consequence, aggregate dental expenditures will likely continue to rise more slowly than in the past.

The good fit of the multiple regression equation ($R^2 = .91$) confirms Leake's hypothesis that the three variables under investigation have a major influence on the level of dental expenditure in Quebec. The R^2 value was higher than expected given the likelihood that dental disease levels, improvements in dental practice technology, and greater public interest in oral health all impact on the demand for dental care as well. This high R^2 is probably explained by the fact that the data are aggregate figures, and the variables under investigation may be capturing the effect of other non-measured variables. However, this study confirms that in Quebec, as in the U.S.,

the number of dentists, the level of income and the availability of insurance all have a positive effect on dental expenditures.

We are particularly concerned about the effect of insurance, not only on patient care, but also on dentists' future incomes. In Quebec, both private and government-sponsored dental insurance have had a positive effect on personal dental expenditures, especially during the 1970s and the 1980s. If government reduces its support for dental programs or even pulls out of dentistry altogether, as recently hinted by Pineault et al,²³ it could have a very significant impact, especially on younger practitioners whose income may be more dependent on government insurance schemes than that of their more established colleagues.

According to figures produced by the Canadian Life and Health Insurance Association, private dental insurance has never been as widespread in Quebec as in Ontario,¹⁵ probably as a consequence of their different industrial infrastructures. The trend in Ontario in recent years has been toward a decline in the percentage of the population with dental insurance coverage. This may be partly due to a cost cutting move by industrial corporations. We expect the trend away from private and public dental insurance to continue, along with increased deductibles and co-payments. The positive effect of dental insurance on dental expenditure is therefore likely to decline in the years to come.

The lack of statistical significance for the income coefficient is surprising, because in a simple linear regression equation income is

strongly correlated with dental expenditure ($R^2 = .7$ and $p < .01$). It may be that compared to "dental insurance" and the "number of dentists practising in the community," "personal income" is a relatively minor predictor of personal dental expenditure. This finding confirms that of Cordes and Doherty¹² with respect to income in the United States. Possibly, as society becomes wealthier and better educated more individuals are oriented toward a preventive oral health approach that leads to a lower demand for expensive reparative treatments. On the other hand, we could expect that the public will show an increasing interest in cosmetic dentistry, which will have the effect of increasing dental expenditures.

The positive sign and the statistical significance of the "number of dentists" variable are thought provoking. They support the argument that supply creates its own demand in dentistry. This supplier-driven demand has two distinct components in the Quebec dental market. As Brodeur et al⁵ indicate, the increase in the number of dentists practising in the non-metropolitan areas of Quebec in the 1970s and early 1980s was instrumental in introducing dental care where it was scarcely available before. This explains the increase in average per capita dental spending over that period. In more recent years, with increased competition among dentists, there has probably been additional economic incentive for dentists to induce demand for their services. While the concept of supplier-induced demand is emotive, Birch⁶ suggests that the practice is not necessarily indicative of unethical behavior, since without it much treatment deemed necessary by dental practitioners might otherwise go undone due to the patients' lack of awareness of their dental needs.

The population of Quebec is growing very slowly, the unemployment rate remains persistently high, and the percentage of the population with private dental insurance appears stagnant. The prevalence of caries among Quebec children has fallen significantly in recent years and the F compo-

nent comprises 90 per cent of the DMF index for 13-year-old children. Even though the dentist/population ratio for Quebec (49/100,000) is lower than the one for Ontario (59/100,000),¹ the dental market in Quebec may not be able to sustain a high income for dentists if the present ratio rises much higher.

The intake of students into two of the three dental schools in Quebec has not been curtailed significantly in recent years. In fact, the vast majority of new dentists graduate from the two francophone dental schools. At the present time, the number of new graduates joining the workforce is greater than the number quitting through natural attrition. If this trend continues, we anticipate that levels of dental care expenditures will be primarily determined by practitioners attempting to maintain their income level. ■

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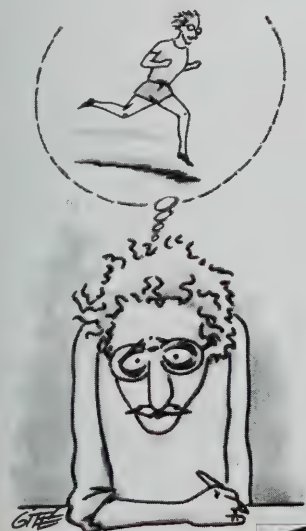
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Appendix

Because the consumer expenditure surveys¹⁴ related mainly to spending patterns in Montreal and because there were surveys for only 12 of the 30 years under consideration in this study, out-of-

- The alternative assumptions, for the sake of sensitivity analysis, are that nonmetropolitan dental expenditure may be equivalent to either 50 per cent or 100 per cent of metropolitan dental expenditures. ■

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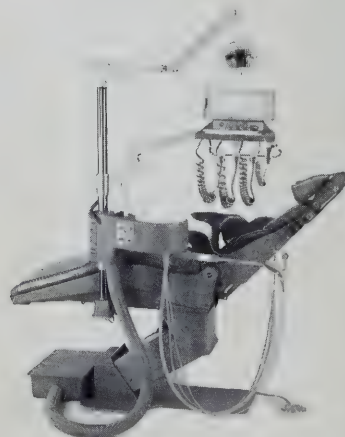
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BOOK REVIEWS

Clinical and Biological Aspects of Dentifrices

G. Embery and G. Rolla (eds.)

1992, Oxford University Press, New York
366 pages, \$78.95

Patients rely on dentists and hygienists to advise them on which toothpaste is best to use. However, it is difficult for the average dental practitioner to keep up with the latest products. The toothpastes of today may contain ingredients to prevent calculus formation, reduce gingivitis, desensitize exposed root surfaces, freshen breath, whiten teeth and, of course, prevent caries.

A great deal of public information is available on how toothpastes work. However, because there is a lot of money to be made from toothpastes, a considerable amount of evidence on the clinical efficacy of various toothpastes is never made public — companies tend to guard their trade secrets quite closely. Nevertheless, this is the best textbook now available on the topic of dentifrices. If you want to add another volume to your collection, this text would certainly be a valuable resource for your dental team.

The book is divided into 28 chapters. It opens with a discussion of the historical and behavioral aspects of tooth brushing and continues on from there, with one chapter on halitosis, and 10 chapters on the control of caries by fluoride. Only one chapter concentrates on a discussion of root caries, however, and little advice is offered on which toothpastes are most effective against caries in dentin. This is unfortunate, since coronal caries are on the decline, and dentists should be more familiar with how to prevent or treat root caries.

Several chapters discuss anti-plaque and anti-gingivitis agents in dentifrices. There are good discussions on how the bis-biguanides (chlorhexidine, cetyl pyrimidine chloride, sanguinarine), phenolics (triclosan, thymol, eucalyptol), soaps (sodium laural sulphate), metal salts (stannous fluoride, zinc citrate), enzymes, copolymers (Gantrez), sugar

alcohols (xylitol), and peroxides can all function to inhibit plaque formation, help in its removal, or inhibit bacterial metabolism in general. The authors of these chapters do a fine job in estimating the relative efficacy of these agents.

The book ends with two chapters on anti-calculus formations, two chapters on the effects of dentifrices on oral ecology, one chapter on the treatment of dentin hypersensitivity, and one chapter on the abrasiveness of dentifrices.

There has been an explosion of new products on the market containing sodium bicarbonate and/or carbamide peroxide, whose therapeutic benefits have yet to be evaluated. Other new products, marketed simply as cosmetics with secret ingredients, cannot be evaluated because they don't have to meet the same requirements as drug-containing dentifrices.

Don't expect to see comparisons between brand-name products in this textbook — the authors keep the discussion at a generic level. Dentists and hygienists are on their own when it comes to informing patients about which products to use, but with the help of this text, at least their advice will be based on solid scientific information.

Reviewed by:

Hardy Limeback, PhD, DDS
Associate Professor, Preventive Dentistry
Faculty of Dentistry, University of Toronto

Contemporary Oral and Maxillofacial Surgery, 2nd edition

by Larry J. Peterson et al.

1993, Mosby Year Book, St. Louis
799 pages, 1,526 b & w illustrations
\$88.00

The popular first edition of this book is currently the standard undergraduate text on oral and maxillofacial surgery in most dental schools. This second edition offers improved coverage of the diagnosis and treatment of temporomandibular joint

disturbances, certain aspects of infectious disease, and implantology.

Like the first edition, the text is presented in a clear and easy to understand style. This second edition is divided into nine sections with 10 appendices. The illustrations are excellent, and there are many high-quality black-and-white photographs. The section on exodontia is particularly strong, and the chapter entitled Management of Temporomandibular Disorders gives an excellent, balanced approach to these problems.

However, the chapter on oral facial clefts should be updated to include current thoughts about the management of patients with labiomaxillopalatine clefts, and the reference list for this chapter should be expanded.

Overall, Dr. Peterson should be congratulated on producing an excellent textbook that will no doubt continue to be the standard for undergraduate education in oral and maxillofacial surgery.

Reviewed by:

David S. Precious, DDS, M.Sc., FRCD(C)
Professor and director of the Graduate Training Program of Oral and Maxillofacial Surgery, Dalhousie University

Introduction to Anesthesia, 8th edition

by Dripps, Eckenhoff
and Vandam
updated by D.E. Longnecker
and F.L. Murphy

1992, W.B. Saunders Co., Philadelphia
495 pages

This reader has watched the evolution of one of the classic anesthesia texts (which was first published in 1957) from the fifth edition "gold standard" to this new eighth edition.

The popular and influential introductory text was initially intended for new residents in anesthesiology. It is designed to impart practical routines for clinicians, which are based on firm scientific principles. Because of this emphasis, the book would also serve as a comprehensive and con-

JOURNAL

July/
Juillet
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Vol. 60
No. 7

cise review for more seasoned practitioners.

The book contains contributions from more than 40 experts in the field of anesthesia and its related disciplines, with particular acknowledgement to the original authors — Drs. Dripps, Eckenhoff and Vandam. Its fundamental and stated goals are unchanged from earlier editions, namely: safety, comfort and convenience (in that order), first for the patient and second for those caring for the patient.

This hard-cover edition consists of seven major sections, ranging from background material, anesthesia preparation, anesthesia medications (including local anesthetics), administration and conduction of anesthesia, special requirements and post-anesthetic care. These major sections are further divided into 38 chapters covering all the basic areas that junior residents would likely encounter. The number of chapters reflects the growth in the text since it was originally published. The fifth edition, for example, has four major sections, covering the same general areas as the eighth edition, divided into 33 chapters and an index.

This is an easy-to-read introductory textbook that is well-illustrated with black and white photographs, line drawings, and tables. Its format is current, and although it is not referenced directly in the body of the text, it provides the reader with sufficient references at the conclusion of each chapter.

While the chapter on airway management is particularly useful, the one on cardiopulmonary resuscitation (notably with respect to advanced cardiac life support protocols) is slightly out of date due to the recent introduction of new emphasis within these protocols.

I was particularly impressed by the mention of an endotracheal tube shaped like a hockey stick for difficult intubations — a trick several of us have been successfully using for several years now.

This is an excellent text for students who are beginning their training in any of the anesthesia-related fields. Its style and content continue to make it one of the classic introductory textbooks. However, the reader should not be fooled by its introductory nature — there is a wealth of information for anyone engaged in

the practice of anesthesia or any of its related scientific disciplines. With this current edition, we see an expansion and updating of the material presented in earlier editions. Because of this, *Introduction to Anesthesia* is a very worthwhile purchase.

Reviewed by:

E. R. Young, B.Sc., DDS, B.Sc.D, M.Sc., FADSA

Associate professor and head of the department of anesthesia, Faculty of Dentistry, University of Toronto and the Wellesley Hospital

Textbook of Clinical Cariology, 2nd edition

edited by Anders Thylstrup and Ole Fejerskov

*1994, Munksgaard, Copenhagen
421 pages, b & w and color illustrations
\$141.00*

A total of 27 well-known dental researchers — mostly Scandinavian but including two Canadians — contributed to the 20 chapters in this book. Most chapters are multi-authored, and the book gives an excellent account of current thinking in cariology. It can be recommended for practising dentists and dental hygienists, as well as for undergraduate and graduate dental and dental hygiene students.

The book covers a variety of topics, such as: saliva; oral microbiology; clinical and pathological features of caries; caries diagnosis; epidemiology; the influence of oral hygiene, diet and fluoride on caries; prediction of caries susceptibility; and the roles or potential roles of fissure sealants and chemotherapeutic and immunological approaches in caries prevention. It was refreshing to observe that the authors don't overstate the role of the mutans streptococci in caries development.

There are also three topics of particular interest to Canadian dentists. First, the editors have had a long-standing concern about the increased prevalence of mild enamel fluorosis in developed countries, and their recommendations for restricting the use of fluoride tablets are largely in accordance with the recommendations of CDA (*J Can Dent Assoc* 59:330-336, 1993). Second,

the book reflects the current European view that the presence of caries should be assessed visually rather than by use of an explorer. Although this is contrary to the current teaching in most of North America, it seems an extremely rational approach. The initial caries lesion is subsurface. Damage to the surface zone through the use of an explorer allows ingress of micro-organisms, and has been shown to preclude the possibility of remineralization. Third, the conclusion reached in the book is that the predictive power of all current methods of caries prediction — including the salivary mutans streptococcal counts now being promoted in Canada — is very modest. In some ways, it is a good thing that caries progression is not very predictable, since it gives the profession a chance to intervene preventively.

The book suffers from some minor problems, however. In the first chapter, the daily output given for saliva is from one to 1.5 litres, whereas chapter two states that it is from one-half to one litre (which is more nearly correct). Page four gives the usual publisher's statement that no part of the book may be copied without permission, yet the book contains some figures for which the original journal has not been given credit.

Reviewed by:

*Colin Dawes, B.Sc., BDS, PhD
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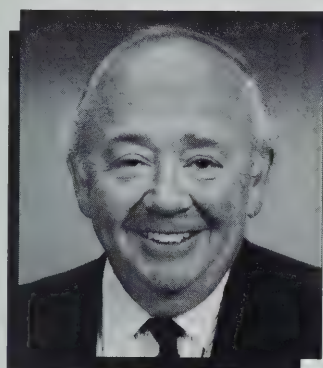
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The Pricing of Insurance: Some Information and Observations About the Premiums You Pay

Dr. Rod Moran, President of CDSPI

When it comes to insurance premiums, many consumers — dentists included — focus on that one year when their premiums went up. But, of course, the price of virtually all products and services go up over time, and insurance is no different.

If you look at the cost of insurance over a number of years, you'll usually find a track record of extremely reasonable pricing. Using plans in the Canadian Dentists' Insurance Program (CDIP) as an example, some rates actually decreased over the past 10 years. Even in the plan with the largest increase, rates only rose by an average of 6.2 per cent annually over 10 years — not much more than the average rate of inflation. Just take a look at the table on the next page for more details.

But how are insurance premiums arrived at? Of all the countless products and services available in the marketplace today, I can't think of any quite as unique as insurance when it comes to setting a price.

Look at our own profession. Each of us has an established fee based on the complexity involved. The work is performed and we're paid accordingly. Any number of professionals can make the same statement.

But insurance, that's another story. Insurers deal with intangibles. They sell us financial security, peace of mind, and protection against risk. How are you supposed to price that?

Well, I'm about to tell you. Let's call this a crash course in insurance pricing. It's good for you to know, because then you'll understand why premiums sometimes go up — and sometimes go down.

Setting Insurance Premiums

I'm going to use life insurance for my explanation. The calculation of premiums all comes down to three factors: the rate of mortality, which is the rate at which insured people are expected to die; investment income earned by the insurance company from investing its policyholders' premiums; and the expenses involved in issuing policies and operating the insurance company.

The rate of mortality is expressed in mortality tables. They're the result of years of mortality statistics on insured people. For every year of age from birth to 100, the table indicates how many people per thousand die each year. The insurance company uses this past experience to make an educated guess as to how many death claims it can expect in any given year in the future. That way, it can determine how many dollars it must collect in premiums to cover the amount of claims dollars it expects to pay out. (It's the same basic procedure that is used for other types of insurance — just substitute mortality rates with statistics on past claims, whether it be automobile accidents or damage to dental offices.)

When insurance companies calculate the price of insurance, they

also estimate the amount of money they expect to earn on their investments. Then they reduce the price of insurance accordingly. This calculation, using the rate of mortality and investment income, gives the "net premium," i.e. the amount that the company must charge just to cover the actual costs of providing insurance.

Next comes "loading" — adding the total amount of the insurer's operating expenses and profit margin to the net premium. This results in the "gross premium" — the amount you pay for insurance.

That's the end of your crash course in insurance pricing. But there's just one last thing. Any significant change in any one of the three essential factors can result in a change in the premium. Premiums can go up if claims are higher than expected, investment income is less than expected, or expenses increase. Premiums can go down if claims are lower than expected, investment income is higher than expected, or the company reduces expenses.

When it comes to claims being higher than expected, every professional group is prone to particular influences. Dentistry is no exception. For example, the recent downturn in the economy has contributed to the increase in long-term disabilities among dentists, and in office break-ins. In turn, the resulting increase in claims can lead to somewhat higher premiums for disability insurance and office insurance.

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Price and the Purchase Decision

If you were buying travel insurance and had narrowed your choices down to three plans offering the same features, you'd probably take the less expensive one.

But it's not as simple when it comes to the insurance policies associated with dentistry. Not all policies are created equal, and sometimes the least expensive policy has gaps in coverage that could prove costly to dentists. In other words, I'm telling you that the purchase decision for dentists' insurance should be based on the value you receive for your dollar, and not necessarily on which policy has the lowest price. Fortunately, though, in many cases the best plan also happens to be one of the lowest priced.

When I say not all policies are created equal, you need look no further than our CDIP plans, because they're specifically designed for our profession.

For instance, CDIP's accidental death and dismemberment insurance includes special provisions for hand and eye injuries, which reflects the importance of dexterity and depth perception to dentists. Our long-term disability insurance offers a residual disability benefit at no extra cost, which provides prorated benefits for partial disabilities that limit your practice. TripleGuard covers any office equipment not located at your practice, such as equipment in storage. And these are just a few of the many features included in CDIP plans to meet dentists' unique needs.

Another reason for not basing your purchase decision on price alone is that one insurer's prices may be lower than a competitor's one year, but then increase a year or two later. There's often a tendency for the premiums for similar plans to balance out over time. Of course, the premiums for insurance plans with level premiums remain constant for the life of the policy. Even with these plans, however, costs usually balance out over time compared to similar plans that have changing premiums.

There's another factor to consider when examining value — the

TABLE I

Change in CDIP Premiums 1984 — 1994

Sample CDIP Plan	1984 Premium (No GST)	1994 Premium (Including GST)	Average Annual Compound Increase (Decrease) 1984 —
1994 Basic Life (Male non-smoker, 35-39)	\$13.48	\$11.52	(1.5%)
Accidental Death & Dismemberment (Single coverage)	\$8.05	\$2.30	(11.7%)
Long Term Disability (Non-smoker, 35-39, Basic only, 30-day elimination period)	\$16.39	\$29.52	6.1%
Malpractice (\$2 million per claim, \$500 deductible)	\$390.00	\$712.45	6.2%
Office Overhead Expense (Non-smoker, 35-39, 100% benefit plan, 30-day elimination period)	\$8.80	\$5.59	(4.4%)
Office Contents (\$50,000 coverage, Fire-resistant, \$500 deductible)	\$155.00	\$165.50	0.7%
Average Annual Rate of Inflation 1984 — 1994			4.0%

hidden cost of your time and effort in shopping around for insurance — dealing with different agents, brokers and insurers, and changing insurers over the years. For many dentists, this problem is easily eliminated by dealing with Canadian Dental Services Plans Inc. (CDSPI) and choosing CDIP plans. All CDIP insurance plans aim to offer excellent value for your dollar, and many are the lowest priced or among the lowest priced plans, compared to similar products in the marketplace.

When premiums rise because of an increase in claims (the most common reason for an increase), it's important to keep a proper perspective on the situation. More claims among dentists means that a real risk is involved, and the plan is working. That's an added incentive

to maintain your coverage or purchase more coverage — not to purchase less insurance because of higher premiums.

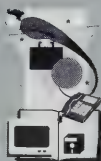
When it comes time to compare insurance plans, I remind you that CDSPI offers an insurance review service so that you can get an evaluation of any insurance policy before you buy. Just forward the policy to us and an independent reviewer will assess it — at no cost to you.

I hope I've broadened your knowledge of insurance pricing in some way. In addition, I hope you realize that when rates do increase, it's for good reason. Also, please keep in mind that price — to an informed consumer — is just one of many important factors involved in the purchase of dentists' insurance. ■

CDA LIBRARY

What's New In the Library This Month?

This month's library package contains a series of informative articles on xylitol, a sweetener used in some popular chewing gums. Library packages are offered to members of the Canadian Dental Association at a cost of \$5 each (plus applicable taxes). For a complete list of all available packages, please contact the library at 1-800-267-6354, ext. 223.



Xylitol

The articles contained in this month's package include:

- Passon, C. "Xylitol: a sugar that fights tooth decay." *Journal of the Colorado Dental Association*. 71(3):19-23, 1993.
- Imfeld, T. "Efficacy of sweeteners and sugar substitutes in caries prevention.[review] *Caries Research*. 24 Suppl 1:50-5, 1993.
- Aguirre-Zero, O., Zero, D.T. and Proskin, H.M. "Effect of

chewing xylitol chewing gum on salivary flow rate and the acidogenic potential of dental plaque." *Caries Research*. 27(1):55-9, 1993.

- Cutress, T. and others. "Caries preventive effect of high fluoride and xylitol containing dentifrices." *Journal of Dentistry for Children*. 59(4):313-8, 1992.
- Svanberg, M. and Birkhed, D. "Effect of dentifrices containing either xylitol and glycerol or sorbitol on mutans strepto-

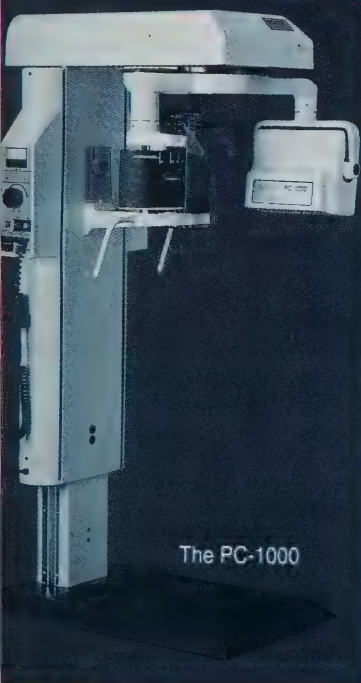
Suspected Abuse?

Several months ago, the CDA Library prepared a library package on family violence, in conjunction with Health Canada. This package is intended to alert and inform the dental team about the incidence and signs of abuse. It is available by calling the CDA Library at: 1-800-267-6354.

cocci in saliva." *Caries Research*. 25(6):449-53, 1991.

- Soderling, E. and Scheinin, A. "Perspectives on xylitol-induced oral effects." [Review] *Proceedings of the Finnish Dental Society*. 87(2):217-29, 1991.
- Scheinin, A. "Dental caries, sugar and xylitol." *Annals of Medicine*. 25(6):519-21, 1993.

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GUEST EDITORIAL

HERE WE GO AGAIN



Luc Dugal, DMD

The new catch-phrase among some promoters in the dental benefits marketplace is "managed dental care." Sound familiar? To quote the noted philosopher Yogi Berra: "It's like déjà vu all over again." It wasn't that long ago that dentists were faced with an onslaught of advertising from the insurance industry professing a new, innovative concept to be known as managed dental care. As we all know, this turned out to be nothing more than a badly disguised attempt to control dental fees through a closed panel system called capitation.

The concept was rejected, in total, by both the public and the dental profession. Capitation was born of the premise that the best way to control the cost of dental care was to control the provider of that care. It was a unique scheme in that this control would be established by paying the provider a fixed amount per patient visit rather than a fee per service rendered. Not surprisingly, promoters failed to convince patients or dentists that capitation had merit.

Now managed dental care is being reintroduced, albeit with some modifications. Gone is the concept of reimbursing the dentist per patient visit. Instead, we are

being asked to join an organization of preferred providers. By joining, say the promoters, dentists will enjoy an increased patient base. All we have to do in return is agree to reduce our fees, usually by about 15-20 per cent. Promoters of the scheme would have us believe that if we join their organization of preferred providers, all our financial problems will disappear. All hail: the golden goose has returned.

But wait. The promoter's message to the public is the same as it was with capitation — standard dental plans are too expensive because dentists charge too much money for their services. At the same time, our friendly promoters are promising dentists increased income in an attempt to induce them to become preferred providers. Somehow these two objectives don't seem to be compatible.

Capitation plans were rejected by the public because they were closed panels that restricted the ability of Canadians to freely access the dentist of their choice. It was also perceived that this could be a case of buyer beware, as it seemed that the promoters were offering Canadians something for nothing. Since few things are free in this world, there was reason to suspect that the dental care provided under capitation might not be of the same quality as the care offered through the existing fee for service system. Preferred provider organizations, or PPOs, do nothing to alleviate these fears.

Dentists should do some simple arithmetic before contemplating joining a PPO. Promoters of these schemes have usually done their homework, and have all the answers. They've also developed elaborate advertising campaigns promising increased patient flow and financial growth to potential participants. The flaw in all this is that PPO promoters have chosen to ignore — or conveniently failed to point out — that the patient pool for dentistry is fairly stable. These promoters usually represent companies with well-es-

tablished dental plans, where the majority of subscribers already seek dental care on a regular basis. In other words, they are not bringing new patients into the dental pool. So where are they finding the "new" patients they've promised? Don't be too surprised if you discover that many of these patients are actually already in your practice. At the very least, they may well be the patients of your fellow dentist down the street. Remember that what goes around comes around. If PPOs take hold, you could also find yourself losing some of your patients to a dentist in another preferred provider organization.

One of the benefits of being a self-regulating profession is our ability to determine, among other things, our own fees. Once you sell your independence to a third-party administrator, you place yourself in a very weak position for any future negotiations regarding fees or any other controls the administrator may wish to impose on your dental practice. Also, if you choose to contract out your services at a discount to a specific group of individuals, and don't offer that same discount to the rest of your patients, you could be perceived to be operating under a two-tier fee system, which could well place you in default of the code of ethics in your provincial jurisdiction.

Managed dental care, whether it is called capitation or preferred provider organizations, involves a question of freedom of choice. Freedom of choice for patients to select a dentist based on their needs and preferences, as well as the freedom of choice provided to dentists by being and remaining part of a self-regulating profession.

The dental profession has been forced to play the role of David to many a Goliath in the past. Well ladies and gentlemen, it is time once again to dust off those sling shots and get ready to rumble. ■

Luc Dugal, DMD, is the chairman of CDA's third party dental plans committee. He maintains a private practice in Calgary, Alberta.

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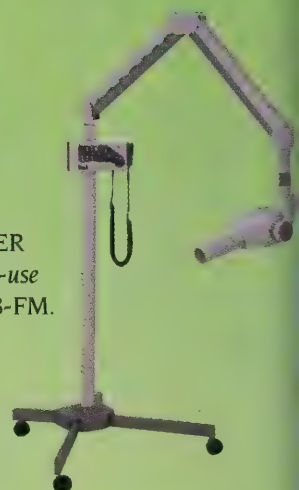
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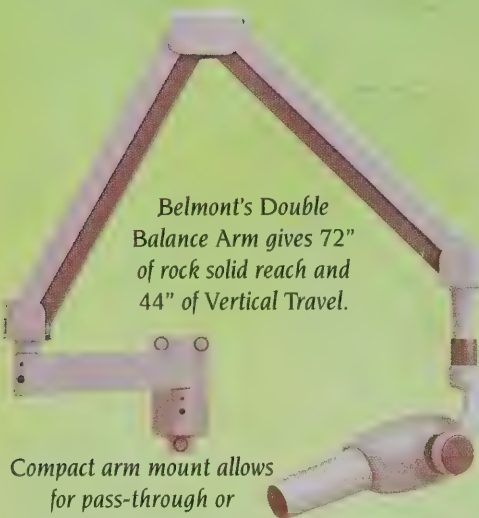
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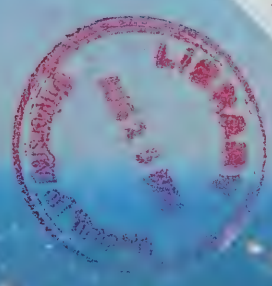
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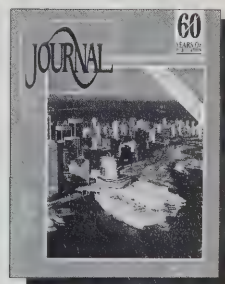
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CDA members, look for your next issue of Communiqué in September.

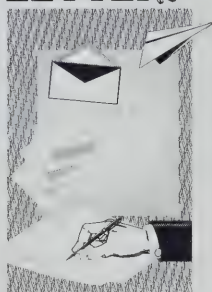


Cover: Vancouver — the site of the 1994 FDI World Dental Congress.

JOURNAL

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LETTERS



Royal Canadian Dental Corps Association

On behalf of the Royal Canadian Dental Corps Association (RCDCA), I wish to commend the *Journal* for the Specialty Feature, "Canadian Dentists at War — 1944," which appeared in the June issue (Crawford, P.R. *J Can Dent Assoc* 60:543-544, 1994). It is very well done.

Canadian dentistry, through its Canadian Army Dental Corp, the Canadian Dental Corps, the Royal Canadian Dental Corps and now the Canadian Forces Dental Service, has done a magnificent job for the military.

This fall at the CDA/FDI meeting in Vancouver, there will be a concurrent meeting of military dentists from around the world. It is our privilege every year, usually at the CDA annual meeting, to host a "Meet and Greet" for former and serving dental personnel. This year's event will be held Sunday October 2, 1994, from 5 p.m. to 7 p.m., in the Waddington Room of Hotel Vancouver.

Next year Canadian military dentistry will be 80 years old. A reunion is planned during the CDA annual meeting in late August 1995.

W.S. MacKenzie, DDS
Secretary Treasurer
Royal Canadian Dental Corps
Association

Female Dentists

I was surprisingly upset (because I thought I was used to it) when I read the comments of CDA president Dr.

Raymond Wenn in his April 1994 editorial "United We Stand." He spoke about how the busyness of Canadian dentists, as well as their overall contribution to the Canadian economy as small businessmen would decline if dental benefits were taxed.

Dr. Wenn's editorial is full of praise for what the CDA has been able to accomplish through its diligent efforts and its concern for Canadian dentists. However, his reference to businessmen as opposed to business *people* spoke even more loudly to the failure to acknowledge both the existence and legitimacy of Canadian female dentists!

The CDA mission statement says in part that the CDA is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada "dedicated to meeting member needs." If this is the case, then Dr. Wenn and the CDA would do well to note that women dentists have special needs and problems. We bear children and frequently have the primary responsibility for their care. We often work part-time, if we can, in order to raise the future members of Canadian society. If we work full-time, we also work extra long hours to take care of our children. Why has the CDA not addressed these needs in their membership programs and benefits?

Our needs as female dentists are legitimate and should be addressed. When my needs as a female dentist are addressed, I will join CDA and accept Dr. Wenn's statement that CDA speaks for all dentists.

Miriam Grushka, M.Sc, DDS, PhD.
Toronto, Ontario

Editor's Note

Dr. Wenn has indicated he certainly meant no slight to anyone in his column "United We Stand." He shares the responsibility of a dental practice with his daughter, Dr. Cheryl Wenn (the mother of two babies), and his office manager, Mrs. Dianne Wenn. A second daughter, Kimberly, is currently enrolled in third year dentistry at Dalhousie University. He considers

each of the three to be business people in the true sense of the word.

New Beginnings

(translated from the French)

I read with interest the President's Column, "Toward a New Beginning," in the May 1994 issue of the *Journal* (60:367, 1994). I wish to congratulate Dr. Wenn for his objectivity and keen sense of justice in the description of the judgement of the Ontario Appeals Court.

Claude Chicoine, DDS
Montreal, Quebec

The World Around Us

I commend the *Journal* for publishing reports from time to time about issues from the world around us which have an impact on our practices. The June issue of *Journal* was particularly good in this respect. Dr. Sandor's description of changes in dentistry in Europe help put proposals for Canadian changes in perspective ("We Are Not Alone." Letters. *J Can Dent Assoc* 60:474, 1994).

Also, Dr. Wenn's comments on the way the insurance industry in Canada is headed are serious (Third-Party Payment Plans Endangered? President's Column. 60:481, 1994). I agree that the likely outcome will be a decline in the standard of oral health of our patients. Perhaps the *Journal* could publish more contributions like those of Dr. Sandor and Dr. Wenn.

Alastair MacLeod, DDS
Sydney, Nova Scotia

Note:

The editor maintains the right to edit letters for space and clarity. Letters submitted for publication in the *Journal* must include the full name and address of the author, and must be signed. Photocopies will not be accepted.



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Join Us At FDI '94

Aurum Ceramic / Classic Dental Laboratories have put together an exciting schedule of events for FDI '94 in Vancouver.

FDI Golf Day

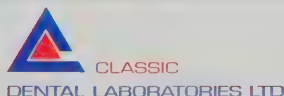
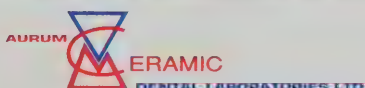
Mark Wednesday, October 5th, 1994 on your calendar. That's the date for FDI Golf Day at the beautiful Swan-e-set Bay Golf & Country Club. Hosted by Aurum Ceramic / Classic Dental Laboratories.

Motorcycle Draw

All Canadian Dentists registered for the FDI 1994 congress are eligible to win a 1200 Sportster Harley Davidson motorcycle (approximate retail value \$12,000). Sponsored by Aurum Ceramic / Classic Dental Laboratories.

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Visit our booth on the Trade Exhibition floor to see the latest in dental technology in action: Celay, computerized cast partial design and our new laser welder. Demonstrations will be scheduled at regular times each day of the Exhibition.



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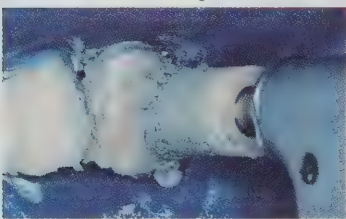
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1. "Conservative color improvement - For teeth with fluorosis-type stain", Killian, Constance M., D.M.D., JADA, May, 1993. 2. "Enamel Microabrasion: New Considerations In 1993," Theodore P. Croll, D.D.S., Adriana Segura, D.D.S., M.S., Kevin J. Donly, D.D.S., M.S., Practical Periodontics and Aesthetic Dentistry Vol. 5 No. 8, October, 1993. 3-10, full bibliography available.
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EDITORIAL

A DENTAL CONVENTION WITH A DIFFERENCE: OPPORTUNITY OR RESPONSIBILITY?



Dr. P. Ralph Crawford,
Editor

The title of this editorial isn't original. It's actually borrowed from one written by Dr. William G. McIntosh, then the chairman of the organizing committee for the 1977 FDI World Dental Congress in Toronto. Published in the September 1977 issue of the *Journal*, Dr. McIntosh's editorial outlined the objectives of the 1977 congress, and explained why dentists should attend this historic meeting — the first ever FDI congress to take place in Canada.

Today we stand on the threshold of another historic meeting — the 82nd FDI World Dental Congress. To be held in Vancouver from October 2-8, 1994, and hosted by CDA, it will mark only the second time in history that Canada has played host to this important international event.

Seventeen years have passed since that first historic meeting in Toronto. With the second Canadian FDI congress set to open in just two months, it's interesting to reflect on all that has happened — has dentistry really changed that much?

Certainly, some things have changed. A perusal through the 1977 journals of both the Canadian and American dental associations revealed only two articles on dental implants — and both were subperiosteals. More telling, perhaps, there were no articles on AIDS and infection control, nor a single advertisement for gloves or masks, nor any real concerns about dental economics, manpower or capitation schemes.

But some things have remained the same. It's clear that the logistics of planning and mounting an international convention are equally as awesome in 1994 as they were in 1977. Those of us who were fortunate enough to attend the Toronto congress will never forget having to bus it back and forth between our downtown hotels and the old automotive buildings on the CNE Exhibition grounds. Fortunately, the logistical challenges presented by inadequate facilities and transportation nightmares never panicked Dr. McIntosh and his organizing committee.

When all was said and done, 5,000 people attended the Toronto meeting — making it the largest dental convention ever held in Canada to that date — and they all had a great time. Plus, the congress even ended up making a modest profit by 1977 standards. Such is the stuff that makes conventions memorable.

FDI's 1994 Vancouver meeting actually had its genesis over 10 years ago, when the president of the Quebec Dental Surgeons' Association suggested that CDA host a second World Dental Congress. The idea caught fire. Within a year, two cities, Montreal and Vancouver, were both campaigning to be selected as the convention site.

In October 1985, the CDA board of governor's gave the nod to Vancouver's bid. It took another year before FDI — during its 1986 World Congress in the Philippines — officially accepted CDA's invitation to host the 1994 congress in Canada, however. That's when the real work began.

Staging an international meeting takes more than hard work. It also takes people of exceptional ability — such as CDA's Dr. Michel Jahjah. A general practitioner from Montreal, Dr. Jahjah is one of those rare individuals who makes "conventioning" a hobby.

Dr. Jahjah accepted the role as CDA's general chairman of conventions in 1989. He'd already built Les Journées Dentaire, the annual meeting of the Order of Dentists of Quebec, into one of Canada's premier dental events, and was ready and eager to take on new challenges. Within a year of his appointment, the real work was in full swing.

Throughout the build-up to FDI, Dr. Jahjah has been assisted by his talented, hard-working staff. Today, with the meeting date fast approaching, they are spread over four cities on two continents — Vancouver, Ottawa, Montreal and London, England. But when all is said and done, much of the credit for FDI 1994 will belong to Dr. Jahjah's dedicated volunteer organizing committee: Drs. Marcia Boyd, Robert Clarke, Ron Markey, Ted Ramage and James Stich. Their hard work and support have been vital.

Organizing more than 200 scientific lectures, a dozen hands-on courses, and five live television presentations is a feat in itself. But Dr. Jahjah's team is also responsible for lining up more than 250 companies to occupy over 600 booths on the trade-show floor, organizing half a dozen social functions involving thousands of people, and literally dozens of meetings for affiliated groups, as well as for putting together some great pre- and post-convention tours.

The work that has gone on to make FDI 1994 the biggest and best dental meeting ever held in Canada is mind boggling. But now everything is ready and, as Dr. Bill McIntosh so aptly said in his 1977 editorial, "The Canadian Dental Association is most anxious that the World Dental Congress be one of the best ever and that we, the dentists of Canada, show what excellent hosts we can be. For Canadian dentists this is a convention with a difference.

"Can you help? Yes, you can — by being there and offering a friendly hand of fellowship. This is both an opportunity and responsibility that should not be missed!"

Some Things Never Change!

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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Looking for a way to enhance patient compliance?

Here's an inside tip.

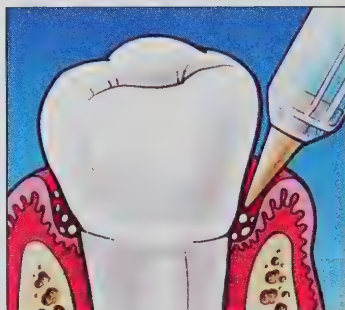
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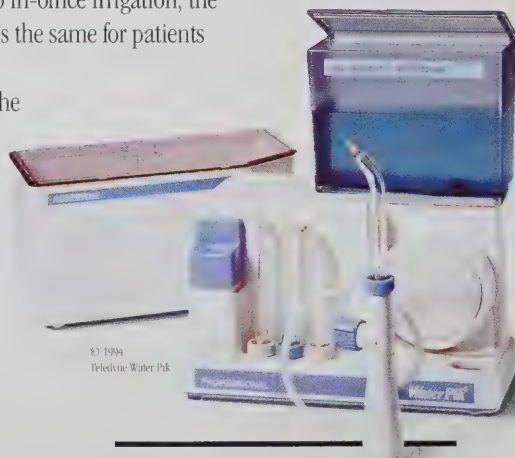
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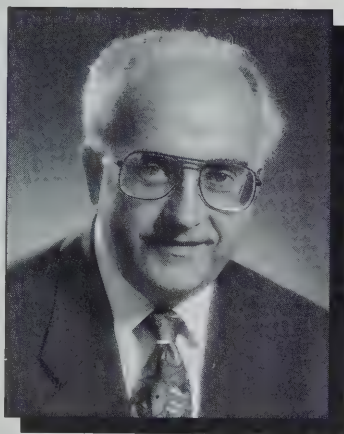
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PRESIDENT'S COLUMN

WORLD FOCUS ON ORAL HEALTH



Dr. Raymond Wenn
President of CDA

As CDA's president, I receive an enormous amount of mail. Most of this correspondence originates within Canada, much of it from individual dentists seeking information or wishing to voice a specific concern. Another large chunk of the letters and faxes that pour into CDA's headquarters each week relate to the myriad of details that go hand in hand with the management and operation of a national association such as ours. On any given day, we hear from provincial dental associations and provincial dental licensing boards, as well as from affiliated organizations such as the Canadian Dental Hygienists' Association, the Canadian Dental Assistants' Association, and the National Dental Examining Board. There's also correspondence from government, both at the federal and provincial level. The amount of mail that is opened, read and responded to by CDA's staff is staggering.

Particularly this year, perhaps because of the role CDA will play in hosting the 82nd FDI World Dental Congress, a significant number of the letters we receive are international in origin. Some of these are sent from

exotic locations — countries or regions that seem to have a mystique all their own. The types of places that invoke a wanderlust, or a desire to visit and explore.

Sometimes, however, the mystique and the reality are two very different things — as a letter that crossed my desk recently made all too clear. Originating in Katmandu, Nepal, the letter was written by a Canadian dentist from Spruce Grove, Alberta, Dr. Robert Yee.

Dr. Yee, who now practises in Tansen, Nepal, wrote CDA to request our assistance in establishing a primary oral health care service in his adopted country. He explained that Nepal is one of the poorest nations in the world, with only 35 dentists to serve its population of 20.5 million people. Rural patients seeking dental treatment often face a one-half to two-day walk to the nearest road, then a full-day bus ride to the nearest clinic. But that's only the beginning. To ensure that they are seen, patients must start lining up outside the doors of these clinics at 4:30 a.m.

Even in the cities, where there is a lack of proper education in oral health care, 84 per cent of teenagers require extractions due to dental caries. In Nepal, oral cancer is the most common type of malignancy, accounting for 30 per cent of all cancers. More shocking still is the fact that people still die from dental infections.

The contrast between the oral health enjoyed by Canadians and the situation that exists in Nepal today is striking, and it certainly adds a touch of reality to the mystique surrounding exotic locales.

Unfortunately, despite the obvious need, there is little that CDA can do to assist directly in the development of a primary oral health care service in Nepal. Our mission, as the national resource for the profession of dentistry in Canada, does not include providing funds for projects in developing countries. CDA provided Dr. Yee with information on The Professional Association Program (PAP) of the Canadian International Development Agency (CIDA).

Through PAP, CDA acts as a facilitator between CIDA and Canadian dentists wishing to undertake projects in developing nations, and provides administrative expertise and support to projects that are ultimately approved (see "CDA and CIDA Team Up to Improve Dental Health in Africa." *Communiqué*, April:7-8, 1994).

In fact, CDA's close cooperation with CIDA is only a small part of our ongoing commitment to international dentistry. Our major involvement is actually through CDA's membership in the Fédération Internationale Dentaire, FDI. Represented by CDA, Canada is one of 83 countries which support FDI's principle that: "all people should have access to the best possible care to achieve optimal oral health."

Canadian dentists will have a unique opportunity to witness this commitment firsthand in 1994, when CDA hosts the FDI World Dental Congress in Vancouver October 2 to 8. Planned around the theme "World Focus on Oral Health," the congress will offer dentists a world-class scientific program, as well as access to the largest dental trade show ever staged in Canada.

When 1994's schedule of hands-on courses, live television presentations, lectures, table clinics and poster presentations gets under way, it will mark only the second time in CDA's 92-year existence that the World Dental Congress has come to Canada. This is an event you shouldn't miss. Why don't you join me in Vancouver to witness dental history in the making? When you arrive, consider becoming an individual supporting member of FDI, and making a personnel commitment to international dentistry.

Dr. Yee's desperate message from Nepal demonstrates all too clearly that we have a long way to go before the people of the world enjoy the same standards of oral health that we take for granted in Canada.

Raymond Wenn, DDS
President of the Canadian Dental Association

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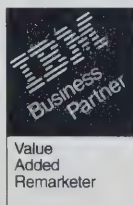
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ANNOUNCEMENTS

National Highlights

October 2-8, 1994

**Joint CDA/FDI
Annual Dental Meeting**
Vancouver, B.C.
(613) 523-1770,
or 1-800-267-6354

October 13-15, 1994

CDA Teaching Conference
Toronto, Ont.
Contact: Gay MacQuarrie
(613) 523-1770, Ext.: 209

October 22-26, 1994

**American Dental Association
Annual Session**
New Orleans, La.
(312) 440-2726

November 23, 1994

**Toronto Academy of
Dentistry
Winter Clinic**
Toronto, Ont.
Mrs. Raisyl Wagman
(416) 967-5649

March 2-4, 1995

B.C. Dental Meeting
Vancouver, B.C.
Marilynne Webster
(604) 736-3645

September/Septembre 1994

September 8-11: 12th Congress of the International Association of Dentistry for the Handicapped to be held in Trier Germany. For more information contact Dr. Wolfgang Jakobs, Bahnhofstrasse 63-65, 5522 Speicher, Germany. Tel.: 6562 2244 or Fax: 6562 1430.

September 8-13: 32nd Iranian Annual Dental Association Congress and 12th International Dental Exhibition in Teheran, Iran. For information, contact: A.H. Arfaei, Iranian Dental Association, P.O. Box 14155 - 3695 IR - Teheran, Iran.

September 14-18: 17th Biennial Conference of the New Zealand Dental Association in Christchurch, New Zealand. For information, contact: N.Z.D.A. Biennial Conference Committee, P.O. Box 1183, Christchurch, New Zealand.

September 19: Latex Allergy Symposium to be held at the Metro

Toronto Convention Centre in Toronto, Ontario. Co-sponsored by the Health Protection Branch's Latex Allergy Task Force, the Canadian Society of Allergy and Clinical Immunology, the Medical Devices Bureau, Health Canada and Ansell Medical. For information call Penny Dodge at (613) 730-6233 or fax (613) 730-8252.

September 22-24: Canadian Academy of Restorative Dentistry and Prosthodontics and The Association of Prosthodontists of Canada — Joint Scientific Meeting to be held at the Banff Springs Hotel, Banff, Alberta. For information contact: Dr. Edward W. McIntyre, 164 Meadowlark Shopping Centre, Edmonton, Alberta T5R 5W9. Tel.: (403) 484-1336 or Fax: (403) 489-4930.

September 24-25: 11th International Oral Implant Symposium in Bali, Indonesia. For more information call: (65) 734 3162.

September 29-October 2: World Congress of Osseointegration to be held in Venice, Italy and sponsored by the University of Roma "La Sapienza" and University of Padova. For more information contact: Prof. G. Dolci or Prof. G.A. Favero, Congress Secretariat, "Giornale di Stomatologia e Ortognatodonzia", P.le Europa 1, 31046 Oderzo (TB), Italy. Tel: (422) 815000 or Fax: (422) 717949.

October/Octobre 1994

October 2-4: Joint Workshop Meeting of the Canadian Association of Dental Consultants and The Canadian Society of Public Health Dentists to be held at Le Meridien Hotel in Vancouver, B.C. For more information contact Dr. Euan Swan, Director Dental Treatment Services 3 (DDTS3) DGDS, 100 Metcalf Street, Ottawa, Ontario K1A 0K2.

October 7: Canadian Academy of Pediatric Dentistry in Vancouver, B.C. For information contact: Dr. Ian Bennett, Executive Director, Canadian Academy of Pediatric Dentistry, 4095 Puget Drive, Van-

couver, B.C. V6L 2V3. Tel.: (604) 733-7976 or Fax: (604) 733-7996.

October 7-8: International Congress on Esthetic Dentistry. The French Society of Esthetic Dentistry along with the Groupe CdP will hold their international conference, CIDE 94, at the CNIT PARIS/La Défense. For information contact: Groupe CdP, 77 rue de Richelieu F 75002, Paris. Tel: (1) 42.61.50.65 or Fax: (1) 42.61.31.95.

October 13-15: The 38th Canadian Dental Association Teaching Conference will be held in Toronto on the topic of Dental Clinical Epidemiology and Decision Making. For further information, please contact Ms. Gay MacQuarrie at (613) 523-1770, ext. 209.

October 14-15: The Icelandic Dental Association's Annual Meeting and Dental Show to be held at the Hotel Loftliedir in Reykjavik, Iceland. For more information contact: S. Dagbjartsdóttir, Box 8596, 128 Reykjavik, Iceland. Tel: (354) 1 34646 or Fax: (351) 1 33562.

October 21-22: Southern Ontario Surgical Orthodontic Study Group Meeting to be held in Windsor, Ontario. For more information contact: Dr. Jeff Berger at (519) 258-2632 or Fax: (519) 258-2637.

October 22-26: 135th Annual Session of the American Dental Association to be held in New Orleans, Louisiana. For information contact: Council on ADA Sessions and International Relations, American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611. Tel: (312) 440 2658 or Fax: (312) 440-2707.

October 24-28: Turkish Society of Restorative Dentistry's 2nd International Congress in Istanbul, Turkey. The main topic is "Lasers in dentistry" (Simultaneous interpretation between English and Turkish will be provided). For information, contact: Mete Üçok, University of Istanbul, Faculty of dentistry, 34390 Capa, Istanbul, Turkey.

October 28: Dental Nutrition Course in Toronto, Ontario, and in Vancouver, British Columbia. This

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continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ontario) 1-800-937-8878.

October 31-November 5: Joint Meeting of the Canadian Society of Forensic Science & Northwest Association of Forensic Scientists at the Waterfront Hotel in Vancouver, B.C. For information, contact: Jeffrey Caughlin, RCMP Forensic Laboratory, 5201 Heather Street, Vancouver, B.C. V5Z 3L7. Tel.: (604) 264-3507; Fax: (604) 264-3499.

November/Novembre 1994

November 3: Dental Nutrition Course in Burnaby, B.C. This continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register, call (from B.C. or Ontario) 1-800-937-8878.

November 3-5: The Croatian Dental Society and the School of Dentistry, University of Zagreb, are organizing the 1st World's Congress of Croatian Dentists, which is to be held in Zagreb. For information contact: AS - Kongresni Servis, Lastovska 23, 41 000 Zagreb, Croatia. Tel.: 385 41 624 100, 624 101 or Fax: 385 41 624 424.

November 3-5: The American College of Prosthodontics — Annual Session at the Hyatt Regency Hotel, New Orleans, Louisiana. For information, contact: The American College of Prosthodontists, tel.: (210) 829-7236.

November 9: Dental Nutrition Course in Victoria, B.C. This continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ontario) 1-800-937-8878.

November 17-19: Odontologisk Riksstämman/Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00; or Fax: (8) 662 58 42.

Continuing Education 1994

Thunder Bay Dental Association

October 22: Oral Pathology — Dr. Dick Elzay

For information contact:

Dr. Wm. E. Turner
Tel: (807) 623-9445

University of Toronto

October 20-21: The Current Treatment and Management of T.M. Disorders

This program is developed by Dr. George Zarb, professor and head of the prosthodontic department, faculty of dentistry, University of Toronto.

November 24-26: Nitrous Oxide in Dental Practice

This 17-hour course introduces the dentist, and indeed the entire health-care team, to the concept of conscious sedation for the effective and efficient practice of dentistry.

For information contact:

Office of Continuing Dental Education
Faculty of Dentistry
University of Toronto
124 Edward Street
Toronto, Ontario
M5G 1G6

Tel: (416) 979-4902 Ext. 4503
Fax: (416) 979-4936

November 22-25: Congrès de l'Association Dentaire Française in Paris, France. For information, contact: Dr. Alain Deyrolle, 92 Avenue de Wagram, 75017, Paris, Tel.: (33) 1 42 27 89 00.

November 22-25: XIIIth International Dental Film and Video Festival in Paris, France. For information, contact: Dr. Maurice Dolovici, Secrétaire Général, Association Dentaire Française, 92 avenue de Wagram, F-75017 Paris, France.

December/Décembre 1994

December 25-January 1: Alpha Omega International Dental Fraternity's Annual Convention to be held at the Marriott Eaton Centre Hotel in Toronto, Ontario. For information contact: Sheila Guston, Executive Director, 347 Fifth Ave., #703 New York, N.Y. 10016. Tel: (212) 683-4155; or Fax: (212) 683-0027.

1995

February 15-19: The Jamacia Dental Association's 31st National Convention will be held at the

Jamacia Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Florida. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Florida 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial Clinical Conference, Towards 2000: Form & Function being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst NSW 2010. Tel: 02 331 6920 or Fax: 02 331 7296.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieläisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317. ■

CDA Announces New Initiatives To Stop Planned Tax On Dental Plan Premiums

Over the next eight months, CDA will launch an intensive communications and media-relations campaign to stop the federal government from imposing a tax on employer-paid dental plan premiums.

First proposed this winter, prior to Finance Minister Paul Martin bringing down his 1994 budget, the planned tax was dropped after CDA, its corporate members and dental patients joined forces to initiate a strong, effective campaign against it. But Mr. Martin now appears to have had second thoughts. He is reported to have stated, in a recent discussion on the issue, that the tax wasn't a question of health, but a question of money.

If it's brought in with the 1995 budget, expected next February, the tax on employer-paid dental plan premiums could increase the annual tax burden of Canadian families by as much as \$200 to \$1,100. Rather than paying the tax, many people would likely opt out of their dental plans, or modify their coverage, to the detriment of their oral health.

In Quebec, where a provincial tax on employer-paid dental plan premiums was recently imposed, 39 per cent of employees indicated they would opt out of their plans, while an additional 38 per cent changed or corrected their status from family to single. Equally important, a strong correlation exists between the frequency at which Canadians visit their dentist and the presence of dental insurance. Statistics show that, on average, 79 per cent of those with coverage attend the dentist at least once a year, while just 48 per cent of those with no coverage make yearly visits.

As employees drop out of their

plans, three results are likely: the government will secure less revenue than anticipated through the new tax; both employers and the employees remaining in existing plans will be faced with higher costs, which could ultimately kill the plans; and the oral health of a significant percentage of the Canadian population will decline. At the same time, dentists will likely experience a substantial decline in busyness, which may force some practices to reduce their staff complement. If this occurs, increased unemployment levels and a decreased income tax potential would further reduce the revenue-generating potential of the dental premium tax.

Given these facts, and its mission to ensure "the promotion and provision of optimal oral health for Canadians," CDA believes that it is essential for employer-paid dental plan premiums to remain untaxed. Starting this month, the association will therefore ask its corporate members, the dentists of Canada and the Canadian public to join forces in a full-scale, comprehensive and co-operative campaign to stop Mr. Martin's planned tax.

A campaign package consisting of a letter from CDA president Dr. Raymond Wenn, briefing notes, and comprehensive instructions on how dentists and their staff can best assist CDA in preventing the tax, will be distributed to every dentist in Canada within the next two weeks. The package also includes a letter from Dr. Wenn to all Canadians, alerting them to the potential implications of the new tax, as well as a prepared letter that concerned patients can use to indicate their opposition to the government's plans.

Dentists are asked to obtain their patients' signatures on three copies of the prepared letter. One copy each should then be mailed to Finance Minister Paul Martin, Health Minister Dianne Marleau, and the patient's Member of Parliament. Mailing labels have been included in each package to facili-



Dr. Raymond Wenn

tate this process. No postage is necessary on correspondence addressed to a minister or a Member of Parliament at The House of Commons in Ottawa.

The campaign instructions also ask dentists to keep a record of the number of letters that they mail to Ottawa on behalf of their patients, and to send this information to CDA on a monthly basis. In addition, dentists are encouraged to contact their own MPs to voice the profession's concerns about the planned tax. And if a dentist's practice includes a senior government official or cabinet minister, he or she is asked to speak to them about the tax issue one on one, as well as to inform CDA of the connection. By making CDA aware of any direct links to the upper echelons of government, and agreeing to participate directly in the campaign, individual dentists could have a significant bearing on the final outcome.

Over the course of the summer CDA will broaden its communications initiatives by conducting research, leading to the development of an enhanced position paper against the tax. The association also plans to discuss the tax issue with its corporate members as well as other affected organizations to develop joint strategies and communications initiatives.

Public awareness of the tax issue will be increased through effective media-relations, as well as

by creating tools that dentists can use to enlist public support for the campaign.

In addition, CDA will hold media training sessions for its key spokespeople, to ensure that they are fully prepared to state dentistry's case to both government and the public. At the same time, the profession will be kept informed of the campaign's progress through regular coverage in the *Journal* and *Communiqué*, as well

as through a second mailing, now planned for September/October.

The campaign will intensify in October, when CDA plans to launch a full-scale media blitz. Press releases outlining CDA's position will be sent to all major news outlets, and the association will take advantage of every available opportunity to express its point of view in press conferences and interviews. At the same time, CDA will work with its partners to im-

plement innovative ways to enlist public support for the campaign.

Depending on the status of the campaign, a third mailing will go out to all dentists in January, and CDA may buy advertising space in appropriate media.

In the end, however, the success of the campaign will depend, to a large extent, on the participation and support it receives from the dentists of Canada and their patients. ■

Mexican Delegation Visits CDA

Two of Mexico's senior dental representatives visited CDA's Ottawa headquarters June 6, 1994, to gain firsthand knowledge of Canada's dental accreditation system.

Dr. Eugenio Deister, academic advisor and dean of the School of Dentistry, Intercontinental University, and Dr. Ernesto Acuña, director of international relations for the Mexican Dental Association, met with CDA officials and attended a council on education meeting.

Mexico is currently investigating the feasibility of establishing its own dental accreditation system. ■



Mexican dentistry visits CDA headquarters (l. to r.): Dr. Ernesto Acuña, past-president and director of international relations, Mexican Dental Association; Mr. Jardine Neilson, CDA executive director; Dr. Eugenio Deister, dean, School of Dentistry, Intercontinental University, Mexico City; Dr. Patricia Sanchez, coordinator to the dean's office, Mexico City.

CDAA Names Honorary Life Membership Recipients

The Canadian Dental Assistants' Association (CDAA) has granted Honorary Life Membership to four dental assistants this year for "their meritorious service and outstanding contribution to the association."

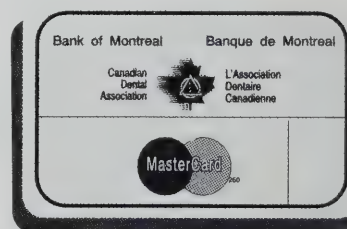
Susan Anholt, Kenaston, Sask.; Marlane Paquin, Vancouver, B.C.; Diane Pike, Brockville, Ont.; and Elizabeth Purchase, St. John's, Nfld., will be awarded the association's highest honor October 1 during CDAA's annual general meeting in Vancouver.

At the same ceremony, CDAA will also award its "Twenty-Five Year Pin" to seven member assistants: Merl Cory, Vancouver, B.C.; Gayle Cowper, Richmond, B.C.; Linda Olsen, Williams Lake, B.C.; Elizabeth Purchase, St. John's, Nfld.; Letitia Quail, Penticton, B.C.; and Maureen Symmes, Edmonton, Alta. ■

CDA Affinity MasterCard Offers New Toll-Free Service

CDA members holding a Bank of Montreal CDA affinity MasterCard can now use special toll-free telephone numbers to obtain customer service and report lost or stolen cards.

To obtain information or assistance on credit limits, billings, address changes, balance status, etc. card holders should phone the following numbers: in Toronto, (416) 232-8440; Montreal, (514) 877-8650; Vancouver, (604) 684-9137; and in all other Canadian or U.S. locations, call 1-800-263-2263. The hours when assistance is available vary depending on the caller's loca-



1-800-263-2263

tion and the day of the week when his or her call is placed.

To report lost or stolen cards, the telephone numbers are: in Toronto, (416) 232-8020; Montreal, (514) 877-8610; Vancouver, (604) 684-4571; and in all other locations in Canada or the U.S., 1-800-361-3361. Security assistance is available 24 hours a day, seven days a week, in all locations. ■

Teledyne Water Pik Sponsors Canadian Masters Golf Tournament

Teledyne Water Pik Canada of Scarborough, Ontario, has made a five-year commitment to sponsor the Canadian Masters — the newest golf tournament on the 1994 Canadian Tour.

"The company and the Canadian Masters are a natural fit," said Peter Leaney, president and general manager of Teledyne Water Pik. "Many of our products, like golf itself, support good health and an active, diverse lifestyle. The tournament also provides us with an opportunity to support critical health research through its association with the George Knudson Memorial Fellowship in Cancer Research."

Although it is not an invitational tournament, the Canadian Masters' \$100,000 purse attracted some of the top golfers on the Canadian tour to Heron Point Golf Links in Alton, Ontario, July 25-31. ■

Prominent Manitoba Dentist Dies

Dr. Walter Gordon Campbell, a prominent figure in Manitoba dentistry for more than 60 years, died peacefully on June 19, 1994, after a courageous battle with cancer.

Dr. Campbell was born in Winnipeg in 1908, and graduated from the University of Minnesota's dental faculty in 1931. He subsequently practised in Winnipeg for four years, and married Mildred Jessie Miln in 1936. Shortly thereafter, the couple left for China, where Dr. Campbell accepted a lectureship on the dental staff of the Western China Union University. (For a complete story on Canadian dentistry's contribution to the founding of a dental school in China see, Crawford, P.R. Canadians pioneering dentistry in China, *J Can Dent Assoc* 54:892-895, 1988.) In 1941, Dr. Campbell wrote the first dental textbook ever published in China, "A Hand-Book of Operative Dentistry." Printed on bamboo paper, it has Chinese script on one side and English on the other.

When the Japanese army began to close in on China in the early

1940s, the Campbells began the long journey back to Canada. Following a harrowing flight over the Burma "hump," flying at 20,000 feet without oxygen, they then had to wait in India for two months before finding passage on a troop transport. Seven weeks later the ship finally arrived in San Francisco.

After serving in the Royal Canadian Dental Corps during the Second World War, Dr. Campbell returned to the University of Michigan where he earned a masters in dental public health. When the Manitoba Ministry of Health established a bureau of dental public health in 1947, Dr. Campbell became its first director. He was also appointed to the department of dentistry for children's first clinical staff when the new University of Manitoba faculty of dentistry opened its clinic in 1960.

Dr. Campbell was secretary-treasurer of the Manitoba Dental Association for more than 10 years, giving up the post in 1968. Before retiring from active practice in 1976, he was the director of the provincial dental social allowance program and a visiting dentist at the Winnipeg Shrine Hospital and the Stony Mountain penitentiary. ■

CDA Guidelines and Policies Available Free To Members

CDA has compiled its guidelines, policies and position statements in a standardized format that is now available at no charge to members of the association.

The new package contains CDA's mission statement and goals, as well as recent guidelines, policies and position statements on: advertising, amalgam, antibiotic prophylaxis and bacterial endocarditis, denture labelling, denture mechanics, fluoride, general anesthesia, infection control, treatment of patients with joint prostheses, lasers, needle use and recapping, nitrous oxide, radiation, referring patients to dental specialists, supervision of dental hygienists, sweeteners in medicine, teeth whiteners, and tobacco products and health.

CDA members may obtain a free package by calling Beth Keeping,

CDA's information officer, toll-free at 1-800-267-6354 (ext. 247). ■

Yet Another Use for Dental Floss

Today it's hard to remember the exact date when dental floss was first used as a prime adjunct in the prevention of dental disease. Nor does a complete list exist of all the other things that dental floss has been used for over the years, such as thread to sew on buttons, temporary shoe laces, and kite string.

But here's a first. A recent Associated Press story describes what may be the most unique use ever ascribed to floss — jail breaking. According to the story, a prisoner at the South Central Regional Jail in Charleston, West Virginia, was able to scale a six-metre wall and make a break for freedom using a braided dental floss rope. The rope, strong enough to hold his weight, was about the thickness of a telephone cord. ■

Students Conference and Meeting Held in Ottawa

Thirteen dental students travelled to Ottawa June 4-5, 1994 — representing the interests of the 1,676 students currently enrolled in Canada's 10 faculties of dentistry — to attend the combined CDA committee on student affairs meeting and CDA/DCF Canadian Dental Students Conference.

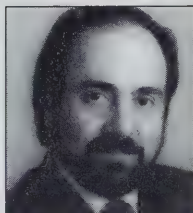
The CDA/DCF Canadian Dental Students Conference, held on the first day of the meeting and sponsored by CDA and the Dentistry Canada Fund (DCF), gave the students an opportunity to hear from the various sections of the profession that have a direct bearing on their interests. Following a brief outline of the history of dentistry in Canada by Dr. Ralph Crawford, presentations were made by Dr. David Somer, the CDA executive council liaison to the committee on student affairs; Mr. James Wegg, manager of the Dentistry Canada Fund; Ms. Joanne LaMontia and Mr. Paul Harris from Canadian Dental Service Plans Inc. (CDSPI); Dr. David Scott, from the National Dental Examining Board

ADHESION DENTISTRY BERMUDA STYLE '94

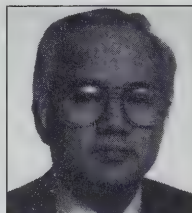
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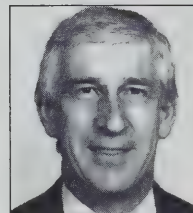
Dr. John Kanca



Dr. David Garber



Mr. Byoung Suh



Dr. John Gwinnett

WHEN: November 2 - 6, 1994

WHERE: Sonesta Beach Resort Hotel, Southampton, Bermuda

SPONSORS: Clinical Research Dental, Bisco Dental (Canada), Bisco Dental (U.S.A.)

DAY 1

Wednesday, November 2, 1994 - 8:00AM - 1:00PM

SPEAKER : Mr. Byoung Suh

TITLE : Chemistry and Adhesion

SUMMARY : Composite and Adhesive Technology has dramatically changed in the past several years. Mr. Suh will review recent changes in technology and explain the relationship between chemistry and adhesion. This relationship is extremely important to the success of today's multitude of dental restorations now available to both patient and dentist.

DAY 2

Thursday, November 3, 1994 - 8:00AM - 1:00PM

SPEAKER : Dr. David Garber

TITLE : The New Changing Face of Dentistry

SUMMARY : Dental practice today is changing exponentially; we are dealing with porcelain laminate veneers, etched porcelain inlays and even veneer bridges, all predictable restorative modalities. Couple this with exciting new ceramic systems, the ability to routinely bond to enamel or dentin, and predictability with osseo-integrated implants, all must change the very way we contemplate the restoration of broken-down mouths.

But with this technology comes new horizons, as dentistry has to look beyond simply restoring teeth and contemplate revamping entire smiles, developing a harmonious relationship and esthetics symmetry between the teeth, the soft tissues and the lips. Surgical plastic procedures have become an integral part of restorative dentistry as have esthetic implant restorations. From the patients' perspective, dentistry is evolving from a concept of the necessities of pain management to esthetic gratification. Today's better informed cosmetic-conscious public is increasingly demanding more of us and expecting more from dental materials and we need to position ourselves to deliver this total dento-facial harmony!

TUITION :

\$ 495 CDN (CANADIAN DENTISTS)

\$ 395 U.S. (U.S. DENTISTS)

\$ 125 U.S./ \$ 150 CDN (AUXILIARIES)

TUITION INCLUDES :

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COCKTAIL PARTY & COURSE NOTES

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Dentists registered on or before September 2, 1994, will receive a \$100 TUITION DISCOUNT, and will be eligible to WIN TWO ROUND TRIP AIRLINE TICKETS TO BERMUDA!

* up to a total value of \$ 1,000.

DAY 3

Friday, November 4, 1994 - 8:00AM - 1:00PM

SPEAKER : Dr. John Kanca

TITLE : Adhesion Dentistry Update

SUMMARY : This presentation will cover the important aspects of adhesion dentistry and how each fit into the general dental practice. Specific topics include:

- Adhesive Systems (a detailed overview)
- Bonding to wet tooth structure
- Bonded Crowns (Pre-sealing & Cementation Procedures)
- Bio-compatibility
- Tooth disinfection
- Class II restorations

DAY 4

Saturday, November 5, 1994 - 8:00AM - 1:00PM

SPEAKER: Dr. John Gwinnett

TITLE: Bonding to Substrates Other Than Tooth Structure

SUMMARY: Dr. Gwinnett will begin his presentation with an overview of the fundamentals of bonding with a focus on new ideas and concepts. Dr. Gwinnett will cover the many clinical considerations for optimizing the bonded interface including:

- Amalgam bonding
(Fundamentals and Technique, Current Systems, Clinical Research Results)
- Non-Tooth Structure Adhesive Dentistry
(Bonding to amalgam, other metals, porcelain, fracture repair!)
- Expanded Uses of Bonding Procedures
(Temporary Pontics, Bonding Emergencies, Desensitizing)
- An overview of the concepts presented at this year's
"ADHESION DENTISTRY - BERMUDA STYLE 94"

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(NDEB); Drs. Helen Lyttle and David Donaldson from the Association of Canadian Faculties of Dentistry (ACFD); and Ms. Susan Matheson, CDA's associate director, education and accreditation.

During the second day, the students conducted a regular meeting of the CDA committee on student affairs. A wide range of topics relevant to dental education were discussed and debated, including: graduate program opportunities, school closures, NDEB examinations, students and stress, the CDA/Dentsply student clinician's program, and the international association of dental students. ■

Alberta Closure Proposal Tabled

A proposal calling for the closure of the faculty of dentistry at the University of Alberta has been tabled until November 1, 1994, following a crucial meeting of the school's board of governors June 24.

The delay will allow the faculty and the profession to finalize a model for a smaller faculty. Under the new plan, it is expected that the faculty will provide the clinical component of the dental program through a clinical foundation supported by the professions of dentistry and dental hygiene in Alberta. ■

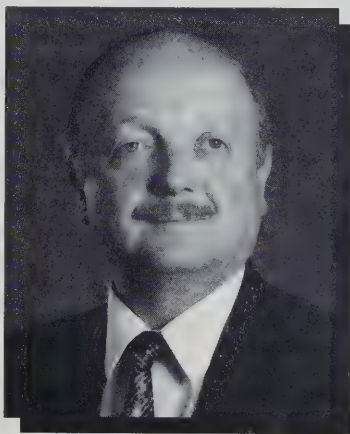
Alberta Dental Association Appoints New Executive Director

Dr. Gordon Thompson of Edmonton has been appointed as the new executive director of the Alberta Dental Association (ADA), effective September 1, 1994.

Dr. Thompson graduated from the faculty of dentistry at the University of Alberta in 1965, and completed both a masters program and a doctorate in the faculty of medicine at the University of Toronto. He served as associate dean at the University of Toronto for five years, and in 1978 was appointed dean of the faculty of dentistry at the University of Alberta. In 1989, after completing two terms as dean, he became acting chairman of the department of dental health care at the University



CDA committee on student affairs (back row, l. to r.): Nareg Apelian, Université de Montréal; Imad Salloom, University of Western Ontario; Linda Teteruck, CDA director of communications; Beverly Chéné, CDA communications secretary; (middle row, l. to r.): Armit Singh, Dalhousie University; Lonny Legault, University of British Columbia; Andy Penuvchev, University of Toronto; Navid Sarooshi, University of Toronto, chairman; Dr. David Somer, CDA executive council liaison; Dr. Greg Mitton, past-chairman; (front row): Cory Sul, University of Manitoba; Sylvie Moreau, University of Alberta; Dr. Kevin Davis, Toronto, past student governor; Catherine Lessard, Université Laval; Greg Deck, University of Manitoba; Mohan Teekasingh, University of Saskatchewan; Hannes Girgis, McGill University.



Dr. Gordon W. Thompson

of Alberta, and on a part-time basis, served as director, dental health services, for the Alberta Department of Health.

One of Dr. Thompson's main areas of interest and involvement over his career has been the evaluation of general and oral health needs. He serves as a Canadian representative to the World Health Organization's (WHO) expert panel on oral health, and has conducted research in such diverse areas as Scotland, Ecuador, Portugal and Germany. He has

more than 100 publications and 60 abstracts to his credit.

As a past-chairman of the Canadian Fund for Dental Education's board of trustees and as the current chairman of the new Dentistry Canada Fund's board of directors, Dr. Thompson has been actively involved in the consolidation of CDA's various fund-raising components into a single organization. ■

Canadian Hospital Association Seeks Transfusion Patients

In a June 21, 1994, press release, the Canadian Hospital Association (CHA) advised all individuals who may have received a blood transfusion in the years 1978-1985 to seek counsel from their family doctor and be tested for HIV.

The years 1978-1985 constitute the so-called risk period that occurred between the known onset of AIDS in Canada and the date when the Canadian Red Cross Society began testing all blood donations for the human immunodeficiency virus (HIV).

CHA believes that the likelihood of anyone becoming infected with HIV through receiving a blood transfusion in the years 1978-1985 is low. However, the only way to rule out infection is to be tested. CHA also believes that a cohesive, coherent national public awareness campaign should be initiated, and that it would be the most effective and responsible way to warn individuals potentially at risk that they should be tested. Such a campaign will go a long way toward convincing this population to take immediate action to protect their own well-being and that of their partners.

To further support its position, CHA has developed a position statement, *Need for National Approach to Communicate Information on Transfusion-related Infection by Bloodborne Pathogens*, which recommends steps that should be taken by all partners in Canada's health system to inform and educate the public about this crucial issue. A copy of the document may be obtained by contacting Michelle Albagli, Director of Communications, Canadian Hospital Association, at: (613) 241-8005. ■

Obituaries

Anthony, Dr. Carl: Dr. Anthony graduated from McGill University's faculty of dentistry in 1967. He died in June 1994.

Bertalan, Dr. Alek: Dr. Bertalan graduated from the University of Manitoba's faculty of dentistry in 1983. He practised dentistry in Victoria and Winnipeg. He died in May 1994.

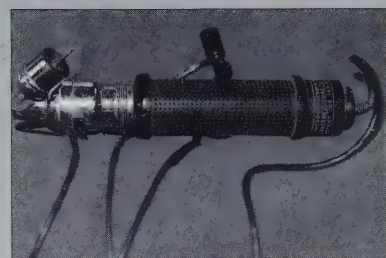
Black, Dr. Donald: Dr. Black graduated from the University of Toronto's faculty of dentistry in 1932. He practised dentistry in Manitoba for 45 years. He died June 27, 1994.

Ciesluck, Dr. Edward: Dr. Ciesluck graduated from the University of Toronto's faculty of dentistry in 1964. He died in May 1994.

Clements, Dr. Ross E.: Dr. Clements graduated from the University of Saskatchewan's faculty of dentistry in 1979. He died June 17, 1994.

"WHAT'S IT?"

Our "What's It?" mystery item this month was delivered to the CDA museum in a box of artifacts donated by Dr. Don Lauriente of the B.C. College of Dental Surgeons. It is about 24 cm long and controlled by an old fashioned type of 250 W on-off lamp switch. A



slide button appears to regulate the current intensity from high to low.

The inscription reads: "Cameron's Vitrohm Potential Adjuster." Any reader able to identify this item, which seems to be some type of dental diagnostic tool, is asked to write to Dr. Ralph Crawford, Editor, 1815 Alta Vista Drive, Ottawa ON K1G 3Y6. ■

Cluett, Alfred William: Dr. Cluett graduated from Dalhousie University's faculty of dentistry in 1955. He died in May 1994.

Desmarais, Dr. Pierre: Dr. Desmarais graduated from the University of Montreal's faculty of dentistry in 1968. He died June 11, 1994.

Ho-A-Shoo, Dr. John Allan Ralph: Dr. Ho-A-Shoo graduated from Northwestern University's faculty of dentistry in Chicago, Ill. in 1947. He died April 25, 1994.

Shalapay, Dr. Kevin Wayne: Dr. Shalapay graduated from the University of Alberta's faculty of dentistry in 1990. He died on May 1, 1994.

Clarification

A "News Update" story published in the May issue (60:373, 1994) of the *Journal*, Toronto Oral Surgeon Awarded Table Clinic Prize, was incomplete. The story failed to mention that the first-prize table clinic presented at the Academy of Osseointegration meeting in Florida by Dr. Jack Zosky was the result of

research undertaken by J.M. Symington, BDS, M.Sc., PhD, FDSRCS (Eng.); R.D. Listrom, DMD, M.Sc., Dip. OS & A; and D. Smith, RN; who were unable to attend the meeting. The *Journal* regrets the omission and apologizes for any confusion it may have caused.

An error appeared on page 547 of the June issue of the *Journal* (Vol. 60, No. 6) in the article by Dr. Jack Lee et al., "The Oral Health of Toronto's Street Youth," pp. 545-548. The first sentence of the last paragraph of the middle column on page 547 should have read: When the decay portion (D) was compared, there was not statistical significance in the untreated decay levels "regardless of the number of years on the street," and not: ... "between street youths and 15 year olds in the general Toronto population."

Table II illustrates the correct information. The *Journal* and Dr. Lee regret the error, and apologize for any confusion it may have caused.

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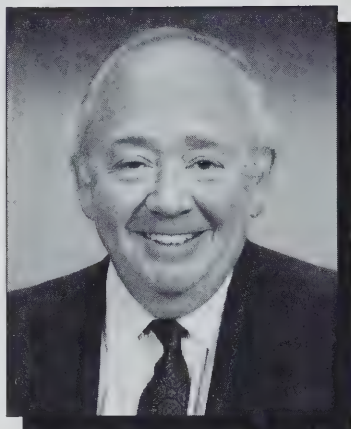
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Your New Product Ideas Make CDSPI a Leader in Financial Programs for Professionals

Dr. Rod Moran

President of CDSPI

At Canadian Dental Service Plans Inc. (CDSPI), we're very proud that the financial programs we administer on behalf of CDA and the co-sponsoring provincial associations are among the most comprehensive programs available to any professional group in Canada. As dentists, we all value our programs' enviable reputation.

Our status as a leader hasn't arrived by accident. At almost any given moment, CDSPI is either in the process of investigating products that may be desirable additions to a program, evaluating a specific product, or launching a new product.

In fact, each of these three activities has been carried out at CDSPI during the last month, or is being carried out now. We're in the process of investigating "specialty" insurance plans such as travel insurance and extra medical coverage. We just completed a thorough evaluation of a specific product — home and auto insurance. And we're in the process of launching a new product — legal expense insurance — in Manitoba, Alberta and British Columbia (it's already available in Ontario).

At CDSPI, the concept of new products isn't restricted to insurance. Just last fall, for example, we launched the Canadian Dental Association Retirement Income Fund (CDA RIF). And while I'm on the subject of retirement investment

programs, we also recently added the new Aggressive Equity Fund to the Canadian Dental Association Retirement Savings Plan (CDA RSP).

As you can see, CDSPI puts a great deal of time and effort into making sure our financial programs include any and all new products that help to meet the needs of Canadian dentists.

Most of our new product ideas come from you. In a variety of ways, dentists across Canada regularly let CDSPI know about new products they'd like to see introduced. Sometimes we receive the message directly, through phone calls, letters, and the material you send us on products offered by other organizations, as well as through the information you relay to the CDSPI representative managing our booth at conventions. In addition, sometimes your ideas are communicated to us through CDSPI's board of directors, management committee members, and provincial association executives. In fact, it's rare that CDSPI has to initiate new product ideas on its own — you already perform this function magnificently.

Evaluating New Ideas

Once a new product idea is under consideration, the first step is to evaluate it. That brings me to CDSPI's "Edge" formula — the criteria we use to determine whether

we can provide dentists an edge with a group plan relative to the other options available in the marketplace.

CDSPI's Edge Formula

"If there is a need in the profession,
If it can be done better,
If it can be priced better,
Then CDSPI will be there
providing that product or service."

We determine "if there is a need" in a number of ways, the most formal being direct mail surveys. Two such surveys are being conducted right now.

We find out "if it can be done better" by verifying that we can offer a product that, in general areas, matches or exceeds the market leaders' existing products — *in addition* to providing special provisions unique to dentistry.

And we establish "if it can be priced better" based on the premise that you get better value for your dollar. This doesn't necessarily mean providing the lowest price — because sometimes in this business lower price also means lower quality product.

When we recently applied the "Edge" formula to home and auto insurance, we determined that CDSPI could not offer dentists an edge. Yes, dentists had a need for this product. Yes, perhaps many dentists could buy it from CDSPI at a lower price — at first, anyway.

But we weren't satisfied that it could be "done better" by CDSPI over the long term.

You see, CDSPI usually works closely with its broker or consultant and the insurer in the design of a new plan, and maintains the power to request modifications to this plan in the future, making sure it always meets the needs of dentists. That capability, however, simply doesn't exist with home and auto insurance. Today the insurers offering home and auto insurance — for reasons specific to underwriting this type of plan — are hesitant to relinquish any control over their group plans. That control includes setting premiums, which would have begun favorably, but could have escalated later at the sole discretion of the insurer. Our input into all aspects of the plan would have been minimal. Home and auto insurance would not have been — like our other products — designed by dentists for dentists.

By the way, we also use the "Edge" formula to evaluate existing products when we conduct our annual review of CDSPI's financial programs. This is what led to the recent change in our insurer for accidental death and dismemberment insurance, a move that gave you improved coverage at a significantly lower premium — more than 50 per cent lower for a great many people.

There have been a lot of other improved products and new products over the last couple of years in our ever-evolving financial programs, with data processing insurance, legal expense insurance (in some provinces), TripleGuard, the CDA RIF and the new CDA RSP Aggressive Equity Fund being the highlights.

It's important, however, that you maintain your excellent record of forwarding new product ideas for financial programs to CDSPI. And we'll keep up our end of the bargain — evaluating potential ideas and offering you the products that pass the test. Together we'll ensure that CDSPI continues to provide some of the most comprehensive financial programs available to any professional group in Canada. ■

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CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	June 30, 1994	May 31, 1994	
Bond & Mortgage Fund	10.66538	10.98293	-0.4%
Common Stock Fund	22.27176	23.72357	3.2%
Money Market Fund	67.13828	66.87804	3.9%
Balanced Fund	40.27440	42.35626	0.8%
Aggressive Fund	9.44242	9.68792	0.0%
G.I.C. Fund			
Term	June 30, 1994	May 31, 1994	
1 yr	6.25%	6.25%	
2 yr	7.00%	6.95%	
3 yr	7.25%	7.20%	
4 yr	7.50%	7.40%	
5 yr	7.75%	7.85%	

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of:

June 30, 1994	May 31, 1994
\$183,443,122.00	\$190,094,075.00

For further information:



CDSPI

Write:

CDSPI

Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

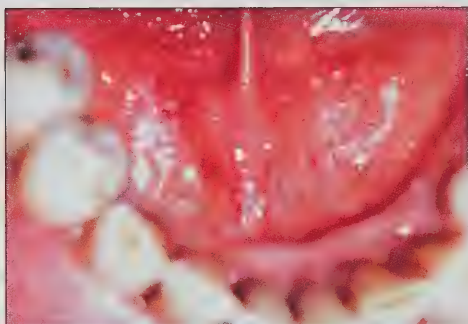
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JOURNAL

August/
Août
1994
Vol. 60
No. 8



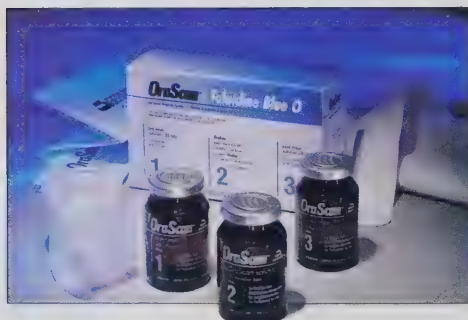
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Survival rates are improving for every type of cancer except oral cancer. That's because it's difficult to detect in its early stages. In fact, six out of ten lesions have already metastasized by the time they are discovered. You can increase the likelihood of early detection and successful treatment by testing your patients with OraScan now.

The highly effective OraScan system provides a fast and simple rinsing method for early cancer detection which greatly increases the patient's probability of treatment with minimal morbidity, impairment and deformity.

Your high risk patients - those over forty who use tobacco and alcohol - could benefit significantly from regular testing with OraScan.

Until now, dentists and physicians had to rely on unaided visual examination and nonspecific physical evidence to identify lesions for biopsy. Because of its sensitivity and accuracy, OraScan is also ideal for biopsy site selection.

Don't wait until your patient has metastasized cancer. Test now with the only oral cancer detection system available: OraScan.

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ORAL CANCER

Perception

People at risk of oral cancer don't go to the dentist.

I refer all patients with lesions, so I don't need OraScan™.

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Patients will resist the OraScan test.

I don't want to scare my patients.

Patients will object to leaving my office with OraScan stain on the tongue.

Reality

Every patient over 40 who smokes, uses smokeless tobacco or drinks heavily is at risk... Some of these patients are in your care and should take the OraScan™ test at least once a year.

You can't refer what you don't see. OraScan can help you find oral cancer at an asymptomatic stage, when a cure with minimal morbidity is possible.

The U.S. Centers for Disease Control reported in March that only 14.3% of respondents in a government survey said they had ever been examined for oral cancer. By including the OraScan procedure in all your at-risk patient visits, your oral cancer exams will be more thorough and accurate.

Patients will appreciate your concern and respect your judgment - after all, more expensive and less accurate tests like the Pap smear, the mammogram and the PSA blood test are standard for most of the adult population.

Your patients who use tobacco or drink heavily are at risk of one of the deadliest forms of cancer. OraScan is a valuable diagnostic aid, and a powerful tool to promote smoking cessation and to deter alcohol abuse.

Give your patients the "I've Been OraScan'd" blue lips sticker (available free from Germiphene) to wear when they leave your office. Patients are used to stickers like "I Gave Blood" and "I Voted". Remind your patients the stain will disappear within a short time.

DON'T WAIT FOR OBVIOUS LESIONS. SCREEN ALL YOUR PATIENTS AT RISK - THOSE OVER 40 WHO USE TOBACCO OR DRINK HEAVILY - AND SEE WHAT YOU'VE BEEN MISSING.

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Advertisement

AUGUST, 1935

SASKATCHEWAN AND STATE MEDICINE

by *F.C. Harwood, DDS, Moose Jaw, Saskatchewan*

In view of the present interest in the question of state medicine, the editor of this *Journal* has requested a concise statement as to the extent to which Saskatchewan is already committed to a form of state medicine, and the proposals for its extension in the near future.

For many years this province has been providing what might be termed state medical services on quite an extensive scale.

Under the Department of Health, various preventive services and the education of the public in health matters have been actively carried on by the minister and his staff, including public health nurses provided by the department. It has led in campaigns against tuberculosis, diphtheria, and cancer, and has dealt successfully with the problem of sanitation. The campaign against tuberculosis has been so effective that this province has the lowest per capita death rate for this disease in the world.

The government has built and maintains three sanatoria for the treatment of tuberculosis. It distributes, also, sera and vaccines and provides treatment for venereal disease at government dispensaries. Cancer clinics are maintained, where radium is available for the treatment of that disease, and a pathological laboratory provides examinations gratis. Incidentally, this latter made nearly 40,000 examinations last year. In all cases care and treatment are provided free to the patient, the cost being borne by direct

taxation or by public revenues. The government assists also 71 hospitals in the province.

The municipalities, as well as the provincial government, are developing community health services. At present, 20 provide free hospitalization for residents, 59 employ a physician full time, and 50 more provide part-time medical services. The cost is again defrayed by direct taxation.

Under the Workmen's Compensation Act, the province provides medical and dental care and hospitalization to those injured in industry.

During the depression, the government has been making a monthly payment to physicians and dentists in the drought areas for emergency services to those on relief, and in the towns and cities of the same area a small amount is allowed to cover the cost of materials for services to rural relief patients. The cities in the province are providing quite a complete medical service, including hospitalization, for those on relief, but only emergency dental services are supplied, principally extractions.

So much for conditions at present! What of the proposals for the future?

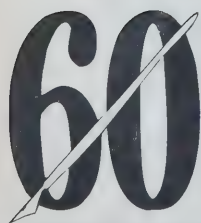
A year ago a committee of the legislature was appointed to gather data pertinent to this subject, and applicable to this province. The Minister of Health has stated that when this committee brings in this report, legislation will be introduced embodying its recommendations. He also

Diamond Jubilee of Publication

Throughout 1994, the *Journal of the Canadian Dental Association* celebrates 60 years of publication as the authoritative "voice" of dentistry in Canada. Each month, in commemoration of its Diamond Jubilee, the *Journal* will reprint an article from Vol. 1, 1935.

This month, the *Journal* looks back on the beginning of "state medicine" in Saskatchewan, where Canada's current system of universal

health care was born. Today, 60 years later, debt levels at both the provincial and federal level are causing government to consider major changes to Canada's health care system, and many of the same issues that were on the table in 1935 are back in the forefront again. As such, it may be important to remember where and why life universal health care began in Canada.



laid down certain essentials of a system for supplying medical services to all, which would be included in such legislation. These, in his opinion, are as follows:

1. It must safeguard the quality of medical services and preserve the essential personal relation between patient and physician, as well as retain for the patient the right of choice of a physician.

2. The system must provide for the future development of preventive and therapeutic services to meet the needs of substantially all the people.

3. The plan must provide service on financial terms which the people can and will meet, through either individual or collective resources.

4. It must include a well organized and properly supported public health program, looking to the prevention of disease.

5. A major essential of a satisfactory medical service is the provision for adequate and assured compensation to physicians, dentists, nurses, and other scientific practitioners, and adequate support to hospitals.



BOARD OF GOVERNORS

NOTICE OF MEETING The Annual Meeting

The Annual Meeting of the Board of Governors of the Canadian Dental Association will be held October 2, 1994 (Sunday), at the Waterfront Hotel, Vancouver, commencing at 8:00 a.m.

It is brought to your attention that meetings of the Board of Governors are open to all members of the Association.

The Board is composed of twenty-five governors with voting privileges and a Chairman. Governors represent members across Canada on a 1 to 500 ratio. The Canadian Forces Dental Services, Student members and Affiliate members from Quebec are represented by one member each.

In addition, there are two non-voting members, namely, the senior dental representatives of Health Canada and the Department of Veterans Affairs.

A complete listing of the Board of Governors follows:

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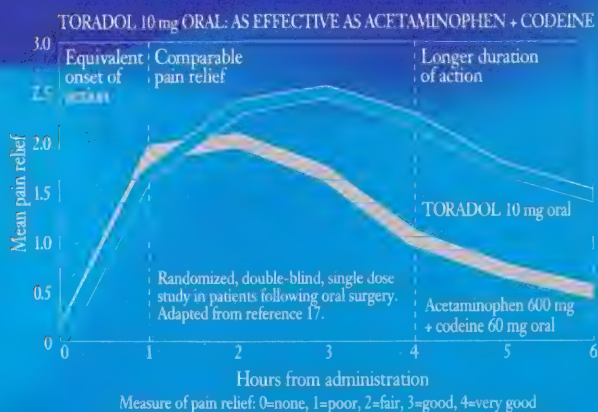
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Effectively treating acute pain

BOOK REVIEWS

Oral Histology: Development, Structure and Function, 4th edition

by A.R. Ten Cate

1994, Mosby-Year Book Inc.,
532 pages, \$78.25

This book has been a standard text for many first-year dental students ever since the first edition was published in 1980, which is a testament to its popularity. However, the cost of the new fourth edition may now have exceeded the threshold for most students, as is the case with many other textbooks.

The book is designed specifically to meet the demands of a first-year audience. It contains orientation chapters to introduce various subjects and relevant terminology, followed by more detailed chapters. Repetition serves as a useful teaching tool. The basic aim is to introduce students to the structure and function of dental hard and soft tissues, so that they will have sufficient background for the more practical aspects of clinical dentistry.

This is a time when many aspects of clinical dentistry are witnessing remarkable advances. Obvious examples include tissue-guided regeneration, implants, and different forms of cosmetic dentistry. Moreover, the economic survival of the profession hinges on the provision of services that match or exceed patients' expectations. Dentists are also increasingly required to provide patients with documented reasons why certain treatment options are preferred to others, along with assurances regarding future prognoses.

In this regard, students are increasingly required to have an adequate knowledge about "second messengers," cell signalling, and membrane receptors, in addition to the impact of cavity design on the biomechanical structure of the tooth, and the effect of function and parafunction on the temporomandibular joint. This means that

the modern undergraduate curriculum is primarily focused on basic functional mechanisms, as compared with the past.

Given these requirements, this reviewer was disappointed with the fourth edition of this book, especially when the principal author has made such an innovative contribution to dental education in Canada.

Although it has a number of authors, the book is edited by Dr. Ten Cate, who also wrote nine of the 21 chapters. The preface states that the book is designed to provide a "delicate balance between maintaining currency, the exposition of controversy and the provision of basic data, in such a way as to benefit the undergraduate student." Nevertheless, the latest reference in the first two chapters on embryology is 1985, despite the fact that most important advances on gene function have been made in the past five years. Similarly, Chapter 20 on the repair and regeneration of dental tissue has no reference later than 1983, although the significant advances made by Genco and many others have occurred more recently. There are many other examples of the book's incompleteness, including Chapter 8 on bone, which fails to include much of the current knowledge on the impact of function on the biodynamics of alveolar bone. Yet such knowledge is crucial to both orthodontics and implant function.

Still, there are some excellent chapters in this book. For instance, the chapters on the oral mucosa (Chapter 18), dentin-pulp complex (Chapter 10), amelogenesis (Chapter 11) and enamel structure (Chapter 12) provide first-rate introductions for the dental undergraduate. In this era of problem-based and case-study learning, however, the role of the textbook is no longer sacrosanct. Rather, textbooks must compete with review articles in both basic and clinical journals.

When consistent excellence is the key to the future of dentistry, this book is disappointing. Only certain

chapters are improvements on previous editions.

Reviewed by:

C.I.B. Lavelle, D.Sc., FRC Path, FRCD(C), Professor, Department of Oral Biology, Faculty of Dentistry, University of Manitoba

Anesthesia and Co-existing Disease, 3rd edition

by R.K. Stoelting and S.F. Dierdorf

1993, Churchill Livingstone Inc.,
678 pages

This is another one of those textbooks that should be — and frequently is — found in the library of every researcher or clinical practitioner in anesthesia or one of its related disciplines.

The book's stated purpose, as with the previous two editions, is to provide the reader with a current and concise description of the pathophysiology of co-existing diseases and its impact on the provision of anesthetic (both general and regional) and related services. To that end, the text highlights common diseases — asthma, for example, is covered in a separate chapter — as well as discussing a wealth of less common diseases.

The fact that this book contains a mere 700 pages is misleading. Each chapter — indeed each page — is absolutely packed with information. While it is possible to skim through some of the more in-depth aspects of physiology and pharmacology, it is difficult to find any significant weaknesses.

This very "meaty" book contains 33 chapters — each of which is referenced directly in the body of the text — and a 40-page index. It is well illustrated with black and white drawings, pictures, tables and graphs, many of which are taken from current scientific journal articles. Each chapter discusses a particular disease state — asthma, hypertension, or valvular heart disease, for example — or, where more appropriate, a number of dis-

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1994
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ease states with respect to various body systems.

In all cases, disease states are discussed according to pathophysiology, patient evaluation (including diagnostic tests), drug interactions, and specific concerns regarding the conduction of anesthesia — airway management, drug selection, recovery considerations, and implications for a full-stomach, for example.

It is very difficult to find fault with this textbook. It is an excellent reference source for students beginning their training in anesthesia, but is equally valuable for more experienced practitioners. This book's completeness makes it a required addition to the reference library of every dentist or physician, regardless of background or speciality interest. The fact that it so nicely incorporates the basic sciences — particularly pharmacology and physiology — into a discussion of total patient care makes it an excellent reference source for the basic scientist as well.

Although it's rather time-consuming, every practitioner (medical or dental) attempting his or her speciality or fellowship examinations in an anesthesia-related discipline would be well-advised to carefully read this outstanding textbook.

Reviewed by:

E.R. Young, B.Sc., DDS, B.Sc.D, M.Sc., FADSA, Associate Professor and Head of the Department of Anesthesia, Faculty of Dentistry, University of Toronto and the Wellesley Hospital

Porcelain and Composite Inlays and Onlays: Esthetic Posterior Restorations

by D.A. Garber and
R.E. Goldstein.

1994, Quintessence Publishing Co.,
\$68 U.S.

This is a book about choices. In 11 chapters, followed by a list of references, it outlines alternatives to conventional posterior amalgam restorations.

The first chapter, written by Dr. K.F. Leinfelder, reviews and com-

pares materials used for posterior restorations.

Chapter 2 describes the features of etched porcelain inlays and onlays, and explains their advantages and disadvantages. Even though this book is supposed to be about porcelain and composite inlays, the authors conclude that the etched-porcelain resin-bonded restoration is the most effective restoration, and that the only comparable conservative treatment is the direct posterior composite resin restoration.

Direct resin restorations have all the inherent drawbacks of microleakage, polymerization shrinkage, thermal cycling problems, and wear. The authors fail to mention the indirect composite inlay, however, which is subject to fewer of these problems.

In fact, there are few references made to indirect composite inlays until Chapter 9, which is written by Dr. H. Strassler and Dr. Z. Litkowski. This chapter, entitled "Composite Resin Inlays, An Alternative to Ceramic Inlays," describes the technique for preparing, fabricating, cementing and finishing these restorations, but the information is not presented in as much detail as in the chapters dealing with porcelain restorations.

On page 118, the authors stress that no occlusal bevel should be placed for indirect composite restorations, and state that the preparation design is the same as for the porcelain restorations described in Chapter 4. However, in Chapter 4 — which describes tooth preparation for porcelain restorations — the authors recommend that the cavosurface margin should be a low ground chamfer, as this creates a more effective seal for the restoration and improves color blending. The reader is left wondering if this statement, meant for porcelain restorations, holds true for indirect composite restorations. Readers who are interested in indirect composite inlays are left to try to adapt techniques designed for porcelain restorations to the indirect composite restoration. Given that porcelain and composite resin are different materials, one must question whether the techniques designed for porcelain can be used inter-

changeably with a system that uses composite resin.

The authors in chapter 9 conclude that indirect composite inlays have advantages over porcelain inlays — including intraoral repairability, cross-splinting of compromised teeth and easy removal if replacement becomes necessary, as well as excellent marginal adaptation — but I would like to have seen more of a comparison of the advantages and disadvantages of porcelain and indirect composite inlays than is presented in this book.

The authors point out that a dry field is necessary when cementing these restorations, and give tips about light-curing units and testers, to ensure that the final restorations are adequately cemented.

The book is up-to-date — it includes discussions of dentin bonding systems, and mentions laser curing as an alternative to conventional light curing units. Chapter 11, by Dr. B. Isenberg and Dr. D. Garber, also discusses milled ceramic inlays and onlays — i.e. CAD/CAM systems.

Despite the fact that this book concentrates on porcelain restorations, I think that it would be a valuable addition to any dental office or library collection. The book contains much valuable information for both the neophyte and the experienced practitioner. There are many superb color photographs and drawings to guide the reader through the preparation procedures, impression making, provisional restorations, cementation of the provisionals and final cementation of porcelain and composite indirect restorations.

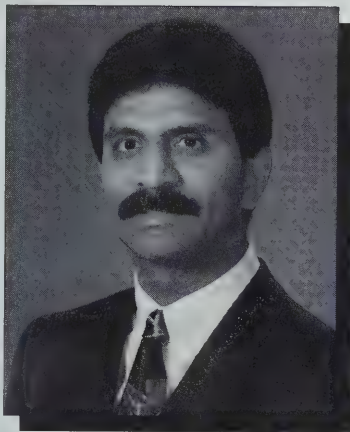
Reviewed by:

Richard B. Price, BDS, MS, DDS, MRCD(C), Associate Professor, Department of Restorative Dentistry, Faculty of Dentistry, Dalhousie University

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PRACTICE MANAGEMENT & SUCCESS



Time Out

Imtiaz Manji, B.Sc.

Principal of ExperDent

When I returned to Canada recently, after enjoying a few days vacation with my wife in Palm Beach, Florida, I made a commitment — to myself, my family and my staff — to get away more often. Taking a break would no longer be the exception, it would become the rule. My staff, who often encourage me to put the brakes on my “full speed ahead” schedule, were delighted. Though all hard-working individuals, they recognize the need for a healthy balance between work and play.

Most of us do recognize that taking time away from our work is a need, not just a desire. But some of us, for all kinds of reasons, justify deferring our leisure time. Whether it's because of economics (“I can't afford to take a vacation”), a tendency toward workaholicism, or poor time management, our society has accepted the notion that it's o.k. to defer “time out.” When you think that some dentists happily boast about working 12, 16 or 18 hours days for months at a stretch, it demonstrates just how out of kilter the whole work-play equation has become.

This lack of available leisure time is in stark contrast to what Canadians were expecting from the '90s. In fact, just 30 years ago futurists were predicting that our

decade would be marked by a surplus of leisure. Perhaps it's time to stop and ask ourselves why so many of us feel that we're working harder and harder for less and less gain. Dentists, unfortunately, are no exception.

The fact of the matter is that we don't just *feel* like we're working longer and harder, we *are* working longer and harder. As Bruce O'Hara notes in his book, *Working Harder Isn't Working*: “Instead of one breadwinner working 24 hours per week, most families now have two breadwinners each working 40 hours per week. Despite extra work hours, real family income has been falling for more than a decade. Stress management...is our major collective preoccupation.”

This work-leisure balance concerns me greatly. At a social level, there's no doubt that weighty measures need to be taken to thwart our scurried existence. Perhaps these are best left to the economists and others at the forefront of the issues facing our country, be it the national debt or increasing poverty. But as individuals, we don't need to wait (nor should we) to change our own situations. It's imperative that we recognize that *leisure is not only as important as work, but that it's important to our work.*

Balance As a Coping Mechanism

Although striking a balance between one's professional and personal life is important for everyone, it is particularly critical in inherently high-stress professions such as dentistry. As rewarding as the profession is overall, it is widely accepted that the typical dentist faces many daily challenges in running a practice, from providing care to fearful patients to keeping on top of the office's financial state of affairs.

In the decade plus that I have been working closely with dentists, I have witnessed many extraordinary and exciting changes — from the benefits of preventative care (cavity-free kids) to the introduction of new clinical technologies. Unfortunately, the one aspect that doesn't seem to have changed is the number of dentists who are close to calling it quits because they can no longer cope. They're either on the brink of burnout or already there. (For more information on this, please see: Bourassa, M. and Baylard, L.F. Stress Situations in Dental Practice. *J Can Dent Assoc* 60(1):65-71, 1994).

Although stress can work as an ally, allowing us to “rise to the occasion,” it can also become a quick enemy when allowed to run ram-

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pant. For irrefutable proof of how stress can be insidious for some and mobilizing for others, visit a handful of dental offices. You'll be stunned by what you see: some practitioners are overcoming the inherent stress of dentistry, while others are being overcome. For the latter group, the ripple effect can be tremendous, in both the professional (loss of patients, staff turnover...) and the personal (deteriorating physical health, marital problems...) sense.

When you speak to such highly-stressed dentists, a common thread often emerges: these individuals tend to drive themselves so hard that they barely see much beyond their confined operatories. They don't take enough time out from the practice, be it for holidays, exercise, family, or other interests. Often concerned with cash flow, they put in more and more work hours in the hope that they'll eventually be able to take some time away.

Pediatric dentist Dr. Marvin Lagstein is but one of many dentists who says he can relate to the above scenario. Although he has always managed to take a reasonable amount of time out from his practice, he wasn't always comfortable doing so. "I used to get anxiety about being away because I was always looking at the loss in production," he says. "I would wonder whether I could justify a vacation and I certainly never thought of leisure as an asset. It was simply an escape. But I've now realized that leisure is an asset to my production. By taking a break, I return to the practice invigorated and, I believe, a better producer when I'm back in the operatory."

What made the difference for Dr. Lagstein? "I now plan for my absences well in advance," he says. "This does a couple of things for me. It lets me know what I've got to accomplish when I am in the practice, and it also gives me something to look forward to."

Planning for Down Time

As Dr. Lagstein discovered, taking time out — or gaining balance in our lives — doesn't just happen. It requires careful forethought, goal setting and planning. Without a

plan, the leisure we're so looking forward to can remain nothing short of a pipe dream.

Let's take holidays — one of the greatest ways to achieve personal rejuvenation and a sense of renewal — as an example. It's now the end of August, summer is winding down, and we're eight months into 1994. What have you done so far with respect to taking time off? Did you take any over the summer or earlier in the year? Perhaps you're planning a vacation prior to the year's end?

Some of you may be reading this and thinking that you haven't taken time off (or won't be) because of finances. If that's the case, it's likely because you've fallen victim to one of the most common blunders: you haven't planned for your practice down time (the days you're absent from the practice, be it for holidays, continuing education, dental meetings, etc.).

Prior to the beginning of each year, you need to pull out the upcoming calendar and plan the next 12 months in terms of which days you plan to be working and which ones you don't. Consider the following: weekend days off, statutory holidays, vacation time, continuing education days, dental meetings/conventions, allowance for sick days and discretionary days off. Basically, the idea is to account for your anticipated absences, rather than having them "throw a curve ball" into your schedule later.

Whatever number of days you end up committing to work, you need to make sure this figure reconciles with your financial needs and those of the practice. Your recent production levels and practice expenses are the best indicator of how many days are needed to break even. Any days worked in excess of this number contribute directly to your income and profit. In other words, if you break even on your expenses in 108 days and plan to work 189 days per year, your income is earned in the last 81 days. These are the days that you can afford to "play with" in your calendar. (More detailed information on this calendar planning is available in CDA's *Taking*

Care of Business, Volume I, Practice and Value Management.)

Some dentists are reluctant to commit to this type of "time out" planning, arguing that their plans may change, and that a summer kayaking trip may replace their winter ski plans. But the beauty of the calendar plan is that it's not a problem to swap work days in one month with days you've booked off in another, *as long as you commit to working the same total number of days in that year.* (An added word of caution here: if you are planning to juggle days, try to do so before patients have been booked into the schedule so that they're not inconvenienced.)

Summary

Earlier in this article, I emphasized that leisure and time away from work are not only important in and of themselves, but that they're important to our work. Again, I draw from my own recent experience of a few days vacation in Florida. The "time out" didn't just allow me to relax, it also gave me a healthy perspective on my work and a freshness in pursuing my goals, something that's very difficult to achieve when you're fully immersed in day to day business matters.

Dr. Lagstein underscores this point: "I've recently begun using my time away from the office as a direct adjunct to the practice. It seems that my most creative thinking and planning for the practice occurs when I'm furthest from the operatory," he says. "My outlook is enhanced in a way that can't be emulated when I'm consumed with the day-to-day challenges of dentistry. And yes, this has a direct impact on my production; but contrary to what most people would expect, it has increased — not detracted from — my annual net revenue."

Dentists who are already achieving this balance should be applauded, but for those who are not, I encourage you to find the way to start doing so. As Bruce O'Hara rightly says, "Prosperity/leisure is not an either/or choice: in the 1990s we must create the means to have them both, or we will wind up with neither." ■



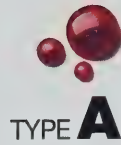
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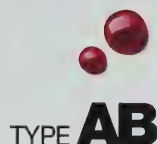


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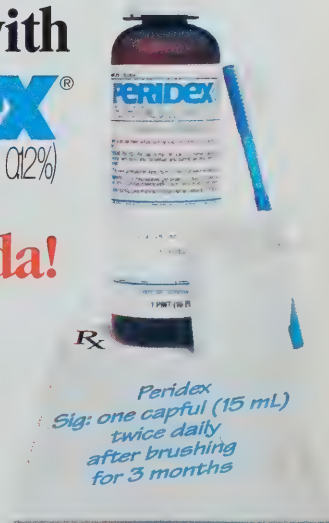
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Canadians at the FDI

P. Ralph Crawford, BA, DMD

The Canadian Dental Association was founded in 1902, only a few years after Dr. Charles Godin and his five conferees met in Paris to establish the Fédération Dentaire Internationale. Probably, given Canada's size and lack of a communications network, the logistics of forming a new international organization were not that much more complex than the logistics of unifying Canadian dentists.

A century ago, there were only about 1,500 dentists in all of Canada. Not only was Canada a relatively new land, but its dentists were stretched across a band of territory more than 6,000 kilometres across — from Halifax on the east coast to Victoria on Vancouver Island. To this day, the enormity of Canada boggles the minds of many of our visitors. All of England, Scotland and Wales could easily be dropped into Canada's largest body of water, Lake Superior, and entirely disappear.

As if the size of Canada's land mass was not enough, the constitutional make-up of the new Dominion gave its provinces complete autonomy for health and education. In 1902, each of Canada's seven provinces had a separate dental act. Today, there are 10 Canadian provinces and 10 provincial licensing authorities.

Dr. Eudore Dubeau

In March of 1902, a call went out to all Canadian dentists from Dr. Eudore Dubeau, the secretary of the Quebec Dental Association:

"Every dentist in Canada who can rise above mere local or provincial affairs in our country, and has thought about the immense advantages to be gained by the nationalization of the dental profession, should unhesitatingly give the idea support."

By September 1902, a meeting had been convened in Montreal. The 344 dentists who attended, one fifth of the country's total, established a unified voice for the dental profession in Canada, and set in place the principles for a constitution, code of ethics, and certification process. The Canadian Dental Association was born.

Dr. Dubeau was a dynamic organizational force throughout his lifetime (1875 to 1953). The secretary of the Quebec Dental Association from 1900 to 1923, he was instrumental in the founding of CDA, and served as president of the national association from 1906 to 1908. He was also one of the founders of the faculty of dentistry at the University of Montreal.

Early records indicate that Dr. Dubeau was also one of the first Canadian dentists to attend FDI meetings. He was active on the FDI council for a number of years before being named vice-president of the organization in 1947, a post he held until his death in 1953.

Dr. Donald Gullett

Dr. Donald Gullett received his dental degree from the University of Toronto in 1923. In 1940 he was appointed registrar of the Royal College of Dental Surgeons of Ontario,

and served as secretary of the Canadian Dental Association from 1956 to 1965. Following his retirement, he wrote the History of Canadian Dentistry, the first and only text of its kind on Canadian dentistry.

Dr. Gullett was first appointed to the FDI council in 1958 and served for six years. He was made a Member of Honor of the organization in 1965.

Dr. William G. McIntosh

Dr. McIntosh was a 1937 graduate of the University of Toronto. A periodontist, he maintained a private practice, a teaching appointment at the University of Toronto, and a consulting role at several hospitals, and served as president of CDA in 1959 and 1960. From 1965 until 1976, Dr. McIntosh was executive director of CDA, and was instrumental in moving CDA's headquarters from Toronto to Ottawa in 1976.

After sitting on several FDI commissions in the early 1970s, Dr. McIntosh was appointed to the FDI council. In 1977 he was elected FDI vice-president — the same year he was general chairman of FDI's 65th World Dental Congress in Toronto.

Dr. McIntosh is an honorary member of the American, Canadian and British dental associations and an FDI Member of Honor.

Dr. William Bedford

Dr. Bedford graduated from the University of Toronto in 1958. He subsequently served as a regional

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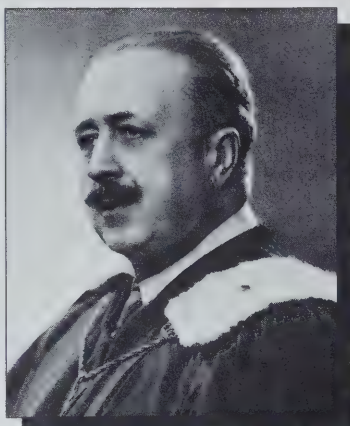
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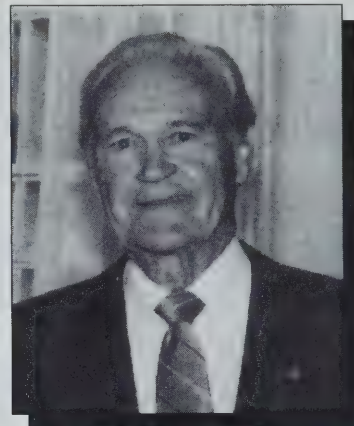
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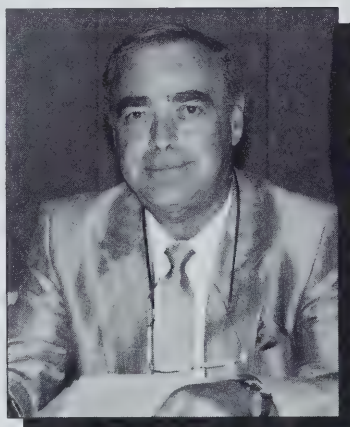
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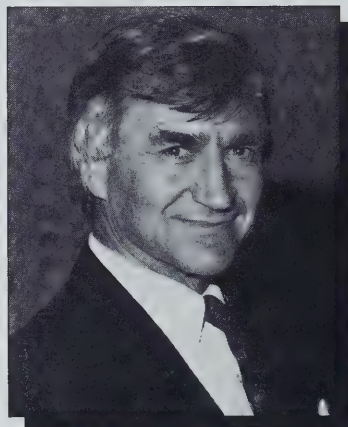
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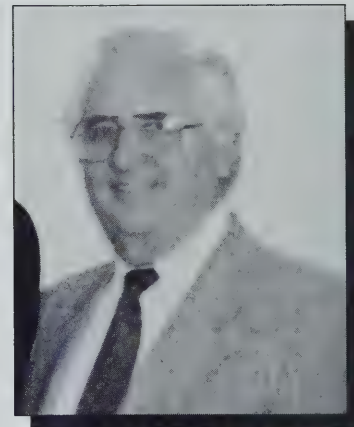
Dr. B. McIntosh



Dr. B. Bedford



Dr. G. Beagrie



Dr. James Wright

dental officer for Health and Welfare Canada from 1976 to 1981, before being appointed as senior consultant for dentistry in Ottawa. He held this position for 10 years, until his retirement in 1991.

A member of the CDA board of governors for 10 years, Dr. Bedford was awarded the CDA Award of Merit in 1992.

Dr. Bedford was a consultant to the FDI standing commission on oral health research and epidemiology, and a member of the working group on oral health promotion. From 1988 to 1991, he served as chairman of the FDI world chief dental officers meeting.

Currently, on behalf of the federal government, he is on the organizing committee for the chief dental officers' meeting scheduled for the 1994 FDI meeting in Vancouver.

Dr. George Beagrie

Dr. Beagrie received his early professional education in Edinburgh, Scotland, followed by graduate training in periodontics at the University of Michigan. Emigrating to Canada in 1968, he accepted a position as professor and chairman, division of clinical sciences, at the University of Toronto.

In 1978 Dr. Beagrie was appointed dean of the faculty of dentistry at the University of British Columbia, a position he held until his retirement in 1988. He has been a member of the board of the National Dental Examining Board of Canada since 1983.

Dr. Beagrie's long-standing interest in the clinical application of basic sciences earned him an appointment as a consultant to the World Health Organization (WHO) in 1973. He was to later

chair the WHO/FDI advisory board that interlinked the two organizations for specific projects and joint working groups such as manpower needs in developing countries and the creation of the index CPITN — the community periodontal index of treatment needs.

In 1981 Dr. Beagrie was appointed chairman of the commission on dental education and practice. FDI recognized his contributions by awarding him the FDI Merit Award in 1989.

Dr. James Wright

Dr. Wright received his dental degree from the University of Alberta in 1956. After beginning his military career in dental college, he served in the Canadian Forces until 1986. At the time of his retirement, with the rank of brigadier-general, he was director general of

the Canadian Forces Dental Services.

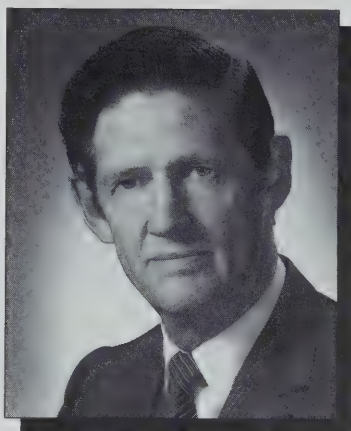
A certified periodontist, Dr. Wright was appointed head of the department of stomatology at the University of Manitoba faculty of dentistry in 1986, and is currently acting dean of the faculty.

Dr. Wright has served as a member of the CDA board of governors and on the CDA executive council. In 1987 he became the first recipient of CDA's newly created Award of Merit.

From 1982 to 1985, Dr. Wright served as a consultant to the FDI commission on defence forces dental services. He was vice-chairman of the committee from 1985 to 1988 and chairman from 1989 to 1990. From 1981 to 1986, he was chairman of an FDI working group investigating the provision of dental service to remote areas throughout the world.

Dr. William Thompson

Following service in the Second World War, Dr. Thompson received his dental degree from the University of Toronto in 1949, graduating as a captain in the Royal Canadian Dental Corps. He received his certifica-



Dr. William Thompson

tion in oral and maxillofacial surgery in 1969. After serving in various dental capacities and positions with the Canadian Armed Forces, both in Canada and abroad, he was named as its director general of dental services in 1976.

In 1980, after serving many years on the CDA board of governors, Dr. Thompson became a member of CDA's executive council. He retired from the military in 1982, the year he became president of the Canadian Dental Association, and is an honorary member of both the Canadian and



Mr. Jardine Neilson

American dental associations. He has also received the FDI Merit Award.

In 1979 Dr. Thompson became chairman of the FDI defence forces dental services commission, following years of service as CDA's national treasurer to FDI. He was elected to the FDI executive council in 1983. In 1987, after four years as a member of the FDI finance committee, he was appointed as FDI treasurer.

continued on page 699

WARNER LAMBERT



Mr. Robert A.R. Clouston, President of Warner-Lambert Canada Inc., is pleased to announce its support of organized dentistry through the sponsorship of the CDA President's Dinner, held in conjunction with the Annual Meeting of the CDA Board of Governors and FDI Congress 1994.

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FDI — It's Been Almost 100 Years

P. Ralph Crawford, BA, DMD

From October 2 to 8, 1994, Canada will host the 82nd FDI World Dental Congress in Vancouver, British Columbia. The Journal is pleased to present this brief historical overview of the Fédération Dentaire Internationale, which for almost 100 years has been the "tie-that-binds" international dentistry.

A philosopher once said, "History is the vast and complex tale of the working of the spirit of man."

When we look back 100 years, and contemplate the working of the spirit of the men and women who toiled unselfishly to create the Fédération Dentaire Internationale (FDI), the wisdom of this statement is self evident.

A century ago, dentistry had barely made that difficult transition from trade to profession. In many ways it was struggling for autonomy and an identity of its own. While the world's first dental school had been founded at Baltimore in 1840, and the world's first dental act passed by the Ontario legislature in 1868, both were still relative infants. Still, there was a growing sense that by sharing the world's dental knowledge, science and experience across borders and oceans, the profession, and ultimately mankind would be better served.

The seed that ultimately led to the birth of FDI was planted during

the world's first International Dental Congress, held in Paris, France, in August 1889. In fact, the invitation published in *Dental Cosmos* in 1888, urging dentists to attend the meeting, laid the foundation for every subsequent international dental meeting held over the next century:

"The invitation is general to dentists throughout the world to take part in the Congress, and to unite in the presentation and discussion of such matters as will illuminate and advance odontological science and contribute to the development of the art of dentistry."

Dental Cosmos reported that more than 400 delegates attended the 1889 Paris congress. The papers presented at the meeting would do credit to any continuing education session today: Inflammation of the Gums, their Classification, Therapeutics, and Pathological Consequences; Suppression of Hemorrhage Following Extraction of Teeth in Hemophilic Patients; The Immediate Treatment of Abscessed or Pulpless Teeth. Of particular note was a case report by Dr. Meng of Paris, who presented a patient on whom successful implantation treatment had been performed two years previously — and we "modern" dentists thought we knew everything.

The success of the Paris congress led to a second International Dental Congress four years later. It was

held in Chicago in conjunction with the 1893 World Exposition celebrating the 400th anniversary of the discovery of the Americas. Thirty-three countries were represented.

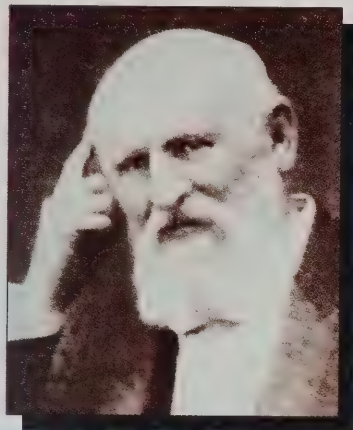
Buoyed by the overwhelming support for the Chicago meeting, the dental profession made plans to hold yet another International Dental Congress. It took place in Paris seven years later, in 1900, on the occasion of that city's World Exhibition.

Dr. Charles Godon

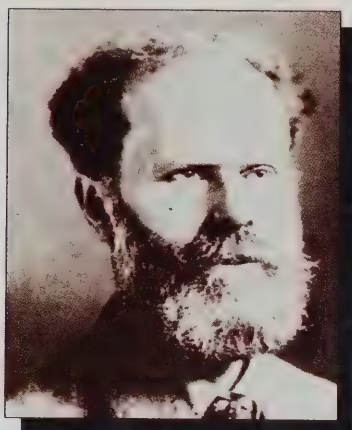
The success of the first three international dental congresses did not happen by accident. Dr. Charles Godon, the dean of the École Dentaire de Paris, had long harbored the idea that there should be an autonomous organization dedicated to international dentistry.

Dr. Godon was instrumental in organizing the first Paris dental congress in 1889, attended the second congress in Chicago in 1893, and was president of the third congress, held in his home city, Paris, in 1900.

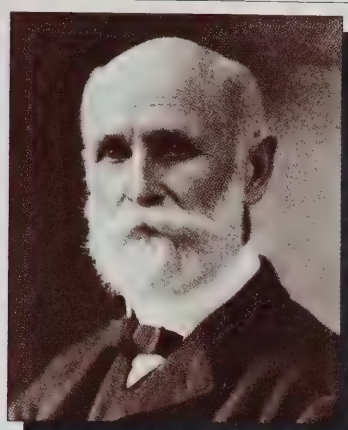
In the Americas — particularly after the founding the world's first dental college in Baltimore in 1840 — dentistry was growing in stature as an autonomous profession. But this was not the case in Europe, where dentistry was largely practised by medical doctors with spe-



Dr. C. Godin: Founder and first president – 1900



Dr. W.D. Miller: FDI President 1904



Dr. G.V. Black: 1st recipient of the Miller Memorial Prize

cial training or an interest in the dental arts.

Dr. Godon, who held degrees in both medicine and dentistry, was of the opinion that it was no longer appropriate for dentistry to be considered as an odontological section of medicine. He was convinced that the art and science of dentistry had increasingly been accepted as an integral part of public health, and that the profession required a separate organization, independent training facilities and a framework of international commissions.

On the morning of August, 15, 1900, in an office in the École Dentaire de Paris, Dr. Godon brought together five other dentists, each a leader in his own country, to discuss an international organization. Meeting with Dr. Godon that day were: Florestan Aguilar, Madrid, Spain; George Cunningham, Cambridge, England; Elof Förberg, Stockholm, Sweden; A.W. Harlan, Chicago, U.S.A.; and Emil Sauvez, Paris, France. By day's end, the six dental futurists had created the Fédération Dentaire Internationale.

Basically, the founding members of FDI agreed to represent the dental profession without distinction of nationality, to disseminate recent scientific advances, to raise the status of the profession while making it autonomous to the medical profession, to share expenses equally and to set the time and place of the next meeting. Dr. Godon was then elected the first FDI president, and Dr. Sauvez the sec-

retary general — positions they were to share for the next five years.

A Constitution: 1901

In 1901, a year after Dr. Godon's historic founding session, FDI's first general meeting was held in Cambridge, England. Before it adjourned, a constitution with four main objectives was adopted:

- The preparation of meetings and international dental congresses
- To maintain and strengthen the ties that bind the national societies to each other
- The organization of such commissions as it may deem necessary to create
- In a general way, to promote the organization of bodies that will contribute to the advancement of odontological science throughout the world.

The fledgling organization was true to its word. During its 1904 meeting in St. Louis, Missouri, three commissions were struggling with the problems of education, public hygiene and the dissemination of dental information. The assembly had also expressed its support for complete dental service for the poor in hospitals, schools and factories. A further commission was established to promote the appointment of dental surgeons in armies and navies, and a resolution was accepted to create a commission on international nomenclature.

Dr. Willoughby Dayton Miller

In the early days, the strength of FDI was sustained by the calibre of one of its staunchest supporters, Dr. Willoughby Miller, who was installed as the federation's president in 1904. Recognized as the greatest living authority on dental science, Dr. Willoughby was best known for his world-famous theory on the etiology of dental caries. Before his untimely death at the age of 54, following an appendicitis operation, he had set forth the thesis for dentistry's autonomy from medicine, and laid the foundation of dental education with his theme, "The Education of the Dentist," which was read posthumously at the Amsterdam meeting in 1907. It was only fitting that FDI established the International Miller Memorial Prize in 1908, and proclaimed Dr. G.V. Black its first recipient in 1910.

At the 1912 FDI meeting in Stockholm, Dr. George Cunningham (one of the original six founders) drew a large audience to his demonstration of a new method for educating the public in the care of teeth — a cinematographic lecture. Cunningham's film displayed moving pictures of oral hygiene procedures and restorative dentistry at a Cambridge England dental clinic.

War Clouds: 1914

The meeting held in August 1914 in London, England, was unusual. With the outbreak of World War One, many delegates were



Dr. G. Leatherman: Secretary-General – 1953-1975



Dr. E. Ahlberg (r), executive director, 1975-1989. Dr. P.A. Zillén (l) – 1990-



Dr. Clive Ross: FDI President – 1990-

scrambling to make last minute travel arrangements to return home, and only a few actually stayed on for the congress.

Congress president Dr. Howard Mummery, in welcoming the handful of delegates to the 1914 meeting, made a profound address that set the true tone for an international organization: "We had hoped that the advance of civilization had rendered such a situation as the present impossible, but we have been sadly disillusioned. It is all the more necessary that we should all use our best endeavors to make the congress a success despite these adverse conditions. For medicine and science know no politics and no nationality and must steadily pursue their way under all conditions and in all circumstances. The friendship and mutual regard fostered by these meetings enable us to meet as brethren in a common cause, whatever our country or our national differences may be."

There would not be another FDI meeting for seven years.

Building: 1920s

In 1921, what history has termed an "unofficial FDI meeting" took place in The Hague for the purpose of rebuilding the devastation wrought by the war. Before the delegates were through, they had successfully formalized a new commission on scientific research and taken the initial steps to establish permanent relations with the Red Cross. By the time the 1922 meeting was held in Madrid, Spain,

nine commissions were fully active. Unfortunately, FDI's funds were on deposit in Germany when the war broke out, and any swift recovery was hampered by an empty treasury.

Topics of note deliberated during the 1920s included the unfortunate loss of millions of teeth, which was attributed to Dr. William Hunter's theory of "oral sepsis"; the illegal practice of dental technicians; and the attempt to develop the ideal toothbrush. The *FDI Bulletin* — printed in four languages — was first published in 1925.

In that same year, it was proposed that if the federation's future was to be based on a firm foundation, it would have to abolish personal membership in favor of membership by national societies. The proposal was enacted within the framework of a new constitution in 1931, which stated that FDI would now be composed of national associations with the right to nominate delegates. Other societies could still become affiliates of the international body, however, and individuals could be admitted as members.

When FDI met in Philadelphia in August 1926, it was acclaimed as the largest professional meeting the world had ever seen. By 1929 FDI had 512 members from 38 countries.

Throughout the world, the 1930s were unsettled years. FDI's executive council was asked to establish a committee to remedy unemployment, and to deal with the excess of dentists as well as the

increase in the number of women in practice.

The 1934 meeting in Italy was disrupted when some dentists appeared in fascist black shirts, causing deep concern about the repression of Jewish dentists by Nazi Germany.

At the 1936 Vienna meeting, 11 commissions were established to cope with FDI's increasing international responsibilities, and simultaneous translation was used for the first time to enhance communication between the delegates. It was in Vienna that secretary-general Dr. Charles Nord first proposed that the *Bulletin* be replaced with an international dental journal. After years of planning, FDI finally signed a contract with a journal publisher in July 1939. Five weeks later, this contract — as happened to so many around the world — would become null and void. The Second World War curtailed all FDI activities for another seven years.

Building, Yet Again

The first postwar FDI meeting took place in Paris in November 1946. Rebuilding was once again an agenda priority and finances an overriding concern. The treasury balance in 1946 stood at a mere £54.9s.5d.

In 1948, the Dublin meeting — titled, "Dental Help to the Masses in Order to Achieve a Caries-Free Population" — began a tradition of organizing FDI's scientific meetings around a specific theme. Milan's theme, the following year,

was "Tendencies in Dental Education."

In 1950, the long-awaited *International Dental Journal*, offered in four languages, published its first volume. That same year, FDI took on its significant role as a non-governmental organization within the World Health Organization.

Dr. Gerald Leatherman

A new constitution was approved in 1952. It stated that FDI was a federation of national associations exercising democratic rights through the general assemblies. In the same year, Dr. Gerald Leatherman of England was appointed secretary general (later executive director). This gifted administrator was to serve the FDI until 1975.

Shortly after assuming office, Dr. Leatherman hired Mary Barker as secretary. Ms. Barker eventually became executive-secretary and then assistant-executive director. For 37 years, serving under 20 presidents, she was to play a major influence in the development and growth of FDI.

In 1959, a constitutional revision created the position of speaker, stating that henceforth the speaker, rather than the president, would officially preside over all FDI meetings. Dr. Hans Freihofer of Switzerland was subsequently appointed as FDI's first speaker of the house.

At the Dublin meeting in 1960, the illegal practise of dentistry by mechanics, a frequent and bothersome topic of debate, was met head on. A two-year study by a committee headed by Dr. Donald Gullet of Canada led to a policy statement on the relationships between dentists and technicians. This rational, logical statement was used on frequent occasions over the years as the "denturist wars" moved from country to country.

A long hoped for project — an FDI dental lexicon — was published in 1966. Containing 40,000 dental terms and published in five languages, it was a monumental piece of work that took a team headed by professor Poul Pederson of Denmark almost five years to complete. When the original 7,000



The moon rises over Vancouver, the site of the 82nd FDI World Dental Congress in 1994

Fédération Dentaire Internationale

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Dr. P.A. Zillén

copies ran out in 1985, it was revised by professor Louis Baume of Switzerland and reprinted.

The Last 25 Years

Probably none of FDI's founders would have ever dreamed in 1900 that the modern world would increasingly depend on a series of numbers and symbols designed to fit the requirements of computer language. In 1970, however, FDI introduced the two-digit numbering system that today is an accepted universal standard.

Publications

Over the years, FDI's publications have undergone a number of revisions. The *Newsletter* was launched in 1953. In 1974 it began to appear as a supplement to *Quintessence International*. But in 1980 the *Newsletter* reverted back to being a stand-alone publication, and remained in this form until it assumed a new name, the *FDI News*, and a new look. In January 1992, *FDI Dental World* became the first publication printed by the new FDI World Dental Press Limited, the

publishing house wholly owned by the FDI.

The very heart of an association is its ability to communicate. Through countless thousands of pages within its newsletters and the *International Dental Journal*, FDI has kept world dentistry informed on the issues of the day.

The Commissions

One of the first tasks facing the six FDI founders in 1900 was to select 17 of their fellows, from 10 different nations, to serve on a new international commission on dental education. Since then, although varying in name, duty and number, FDI's commissions have played an invaluable role in the preparation of reports and information, leading to the adoption of resolutions and policies.

In 1975, when Dr. Jan Erik Ahlberg succeeded Dr. Leatherman as FDI's executive director, there were seven commissions. Under

his guidance, the number of commissions was reduced from seven to four, which was consistent with FDI's desire to streamline its operations. At the 1992 meeting in Berlin, the four remaining commissions were gathered under one umbrella, the FDI commission. This body, comprised of 10 elected members, acts as FDI's board for oral science, practice, products and education.

The main item of new business debated at the general assembly in Manilla in 1986 was the establishment of a task force to review FDI's objectives and future activities. The task force marked the beginning of a new era for the organization.

The End Of the Beginning

A Mission Statement — to be the worldwide voice of dentistry, to work for oral health, to support and promote its members and to collect and disseminate relevant informa-

tion — was adopted by the general assembly in Singapore in 1990. This mission, combined with the action plan initiated in Milan the following year and a new constitution adopted at the Berlin meeting in 1992, is what current FDI president Clive Ross refers to as "the end of the beginning of a new era in the history of the FDI." ■

Note: The author is grateful to those numerous scribes who have recorded the events of FDI down through the years. Particular recognition is given to two works from which many references were drawn: Ennis, J. (1967) *The story of the Fédération Dentaire Internationale, 1900-1962*, Fédération Dentaire Internationale, London; and Freihofer, Hans H. *The Fédération Dentaire Internationale, 1900-1975*. *Int Dent J* 25:157-165.

Fédération Dentaire Internationale

Annual Sessions Presidents and Secretaries General (Executive Directors)

Date	Site	President	Secretary-General
1901	London, UK	Dr. Charles Godin – France	Dr. Emile Sauvez
1902	Stockholm, Sweden	Dr. Charles Godin – France	Dr. Emile Sauvez
1903	Madrid, Spain	Dr. Charles Godin – France	Dr. Emile Sauvez
1904	St. Louis, USA	Dr. Charles Godin – France	Dr. Emile Sauvez
1905	Hanover, Germany	Dr. Willoughby Dayton Miller – USA	Dr. Edward Cameron Kirk
1906	Geneva, Switzerland	Dr. Willoughby Dayton Miller – USA	Dr. Edward Cameron Kirk
1907	Amsterdam, Netherlands	Dr. Emile Sauvez – France	Dr. Edward Cameron Kirk
1908	Brussels, Belgium	Dr. Emile Sauvez – France	Dr. Edward Cameron Kirk
1909	Berlin, Germany	Dr. Charles Godin – France	Dr. Fritz Schaeffer-Stuckert
1910	Paris, France	Dr. William Bromfield Paterson – UK	Dr. Fritz Schaeffer-Stuckert
1911	London, UK	Dr. William Bromfield Paterson – UK	Dr. Fritz Schaeffer-Stuckert
1912	Stockholm, Sweden	Dr. William Bromfield Paterson – UK	Dr. Fritz Schaeffer-Stuckert
1913	The Hague, Netherlands	Dr. William Bromfield Paterson – UK	Dr. Fritz Schaeffer-Stuckert
1914	London, UK	Dr. William Bromfield Paterson – UK	Dr. Florestan Aguilar
1921	The Hague, Netherlands	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1922	Madrid, Spain	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1923	Paris, France	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1924	Luxemburg,	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1925	Geneva, Switzerland	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1926	Philadelphia, USA	Dr. Truman W. Brodhy – USA	Dr. Florestan Aguilar
1927	Copenhagen, Denmark	Dr. Florestan Aguilar – Spain	Dr. Florestan Aguilar
1928	Cologne, Germany	Dr. Florestan Aguilar – Spain	Dr. Georges Villain
1929	Utrecht, Netherlands	Dr. Florestan Aguilar – Spain	Dr. Georges Villain
1930	Brussels, Belgium	Dr. Florestan Aguilar – Spain	Dr. Georges Villain
1931	Paris, France	Dr. Florestan Aguilar – Spain	Dr. Georges Villain
1932	Zürich, Switzerland	Dr. Georges Villain – France	Dr. Charles F.L. Nord
1933	Edinburg, Scotland	Dr. Georges Villain – France	Dr. Charles F.L. Nord
1934	Como, Italy	Dr. Georges Villain – France	Dr. Charles F.L. Nord
1935	Brussels, Belgium	Dr. Georges Villain – France	Dr. Charles F.L. Nord
1936	Vienna, Austria	Dr. Georges Villain – France	Dr. Charles F.L. Nord

Annual Sessions Presidents and Secretaries General (Executive Directors) (continued)

Date	Site	President	Secretary-General
1937	Stockholm, Sweden	Dr. William H.G. Logan – USA	Dr. Charles F.L. Nord
1938	Paris, France	Dr. William H.G. Logan – USA	Dr. Charles F.L. Nord
1939	Zürich, Switzerland	Dr. William H.G. Logan – USA	Dr. Charles F.L. Nord
1946	Paris, France	Dr. Alfred Ernest Rowlett – UK	Dr. Charles F.L. Nord
1947	Boston, USA	Dr. Alfred Ernest Rowlett – UK	Dr. Charles F.L. Nord
1948	Dublin, Ireland	Dr. Charles F.L. Nord – Netherlands	Dr. Marie Ferdinand Watry
1949	Milan, Italy	Dr. Charles F.L. Nord – Netherlands	Dr. Marie Ferdinand Watry
1950	Paris, France	Dr. Charles F.L. Nord – Netherlands	Dr. Marie Ferdinand Watry
1951	Brussels, Belgium	Dr. Charles F.L. Nord – Netherlands	Dr. Marie Ferdinand Watry
1952	London, UK	Dr. Charles F.L. Nord – Netherlands	Dr. Marie Ferdinand Watry
1953	Oslo, Norway	Dr. Oren Al Oliver – USA	Dr. Gerald H. Leatherman
1954	Scheveningen, Netherlands	Dr. Oren Al Oliver – USA	Dr. Gerald H. Leatherman
1955	Copenhagen, Denmark	Dr. Oren Al Oliver – USA	Dr. Gerald H. Leatherman
1956	Zürich, Switzerland	Dr. Albert Joachim – Belgium	Dr. Gerald H. Leatherman
1957	Rome, Italy	Dr. Albert Joachim – Belgium	Dr. Gerald H. Leatherman
1958	Brussels, Belgium	Dr. Thure Brandrup-Wognsen – Sweden	Dr. Gerald H. Leatherman
1959	New York, USA	Dr. Thure Brandrup-Wognsen – Sweden	Dr. Gerald H. Leatherman
1960	Dublin, Ireland	Dr. Obed H. Muen – USA	Dr. Gerald H. Leatherman
1961	Helsinki, Finland	Dr. Obed H. Muen – USA	Dr. Gerald H. Leatherman
1962	Cologne, Germany	Dr. Jean Delibéros – France	Dr. Gerald H. Leatherman
1963	Stockholm, Sweden	Dr. Erigh Müller – Germany	Dr. Gerald H. Leatherman
1964	San Francisco, USA	Dr. Erigh Müller – Germany	Dr. Gerald H. Leatherman
1965	Vienna, Austria	Dr. Kaut Gard – Norway	Dr. Gerald H. Leatherman
1966	Tel Aviv, Israel	Dr. Poul O. Pedersen – Denmark	Dr. Gerald H. Leatherman
1967	Paris, France	Dr. Poul O. Pedersen – Denmark	Dr. Gerald H. Leatherman
1968	Varna, Bulgaria	Dr. W. Steward Ross – UK	Dr. Gerald H. Leatherman
1969	New York, USA	Dr. Jack Stork – Netherlands	Dr. Gerald H. Leatherman
1970	Bucharest, Rumania	Dr. Harold Hillenbrand – USA	Dr. Gerald H. Leatherman
1971	Munich, Germany	Dr. Harold Hillenbrand – USA	Dr. Gerald H. Leatherman
1972	Mexico City, Mexico	Dr. Harold Hillenbrand – USA	Dr. Gerald H. Leatherman
1973	Sydney, Australia	Dr. Hans Freihofer – Switzerland	Dr. Gerald H. Leatherman
1974	London, UK	Dr. Hans Freihofer – Switzerland	Dr. Gerald H. Leatherman
1975	Chicago, USA	Dr. Maynard K. Hine – USA	Dr. Jan Erik Ahlberg
1976	Athens, Greece	Dr. Jan Erik Ahlberg –	Dr. Jan Erik Ahlberg
1977	Toronto, Canada	Dr. Rolf Braun – Germany	Dr. Jan Erik Ahlberg
1978	Madrid, Spain	Dr. Rolf Braun – Germany	Dr. Jan Erik Ahlberg
1979	Paris, France	Dr. Louis Baume – Switzerland	Dr. Jan Erik Ahlberg
1980	Hamburg, Germany	Dr. Louis Baume – Switzerland	Dr. Jan Erik Ahlberg
1981	Rio de Janeiro, Brazil	Dr. Thorsten Aggerd – Sweden	Dr. Jan Erik Ahlberg
1982	Vienna, Austria	Dr. Thorsten Aggerd – Sweden	Dr. Jan Erik Ahlberg
1983	Tokyo, Japan	Dr. Jean Jardine – France	Dr. Jan Erik Ahlberg
1984	Helsinki, Finland	Dr. C. Renton Newbury – Australia	Dr. Jan Erik Ahlberg
1985	Belgrade, Yugoslavia	Dr. Ariel Gomez – Argentina	Dr. Jan Erik Ahlberg
1986	Manila, Philippines	Dr. Ariel Gomez – Argentina	Dr. Jan Erik Ahlberg
1987	Buenos Aires, Argentina	Dr. Carlton H. Williams – USA	Dr. Jan Erik Ahlberg
1988	Washington, USA	Dr. Carlton H. Williams – USA	Dr. Jan Erik Ahlberg
1989	Amsterdam, Netherlands	Dr. Roberto Gonzalez-Giralda – Spain	Dr. Jan Erik Ahlberg
1990	Singapore	Dr. Roberto Gonzalez-Giralda – Spain	Dr. Per Ake-Zillén
1991	Berlin, Germany	Dr. Kazuo Yamazaki – Japan	Dr. Per Ake-Zillén
1992	Milan, Italy	Dr. Clive Ross – New Zealand	Dr. Per Ake-Zillén
1993	Göteborg, Sweden	Dr. Clive Ross – New Zealand	Dr. Per Ake-Zillén
1994	Vancouver, Canada	Dr. Clive Ross – New Zealand	Dr. Per Ake-Zillén

COSMETIC DENTISTRY



Incorporating Cosmetic Dentistry Into a General Practice

Dr. David S. Philip, BDS

Cosmetic dentistry needs little introduction. It has been practised in various forms for millennia, and modern dentistry has benefited significantly from the gradual evolution of its materials and techniques. Because of cosmetic dentistry's lucrative adaptation to clinical dentistry, research into better materials, capable of withstanding the physiological processes in the oral cavity and the considerable stresses applied by the masticatory apparatus, is progressing at an accelerated pace.

The emphasis of this research is now toward materials that a well-informed, competent dentist can handle quite easily to provide pleasing and functionally-sound permanent replacements for various parts of the oral apparatus, both hard and soft tissues.

Today's society is increasingly appearance conscious. As dental practitioners, we are often forced to respond to the demands of patients who desire beautiful smiles. They have been conditioned to desire a certain esthetic standard through television programs, films, and magazines that promote looking good, feeling good, and healthy living. Our patients are bombarded with this information every day, and their concept of beauty is being moulded constantly. The truism: "Beauty is in the eye of the

beholder," and its corollary: "Beauty in things exists in the mind which contemplates them," have never been more apt than in their application to modern dentistry than they are today.

But patients aren't the only ones being bombarded with information. Regardless of whether they're already meeting the cosmetic demands of their patients, or only contemplating such a move, the average dental practitioner is constantly inundated with data on the latest composite, the most recent porcelain, the most current bonding technique, the most up-to-date instrument to facilitate the application of these materials, and the most modern gadget to ensure success in shaping restorations. Most of these products, when purchased, lie on the shelf and gather dust, because the dentist is either not confident or not sufficiently well-informed to truly understand the basic principles underlying the provision of quality cosmetic care to the many patients who seek it.

If their individual dentist cannot provide this type of care, patients will seek treatment elsewhere. But it's clear that these patients could be retained if their practitioner was prepared to provide a quality cosmetic service that satisfied their cosmetic needs. At the same time, the dentist will derive considerable

personal satisfaction from the effort invested. It is recommended that dentists wishing to follow this path set goals for themselves, and introduce cosmetic dentistry into their practice gradually.

Education

A good library is mandatory. An investment in quality books is essential both for reference and for ongoing self-education. The following publications are recommended:

a) *Esthetic Dentistry*,¹ by Barry G. Dale, DMD and Kenneth W. Aschheim DDS. If the dentist, because of economic constraints, only contemplates purchasing one technique book, this should be it. The book gives excellent clinical tips and solid background on materials. However, information and research on bonding techniques have progressed well beyond what is presented in this first edition of the text, which was published in 1990. This might be rectified in a second edition. This is nevertheless an excellent overview of cosmetic dentistry.

b) *Change Your Smile*,² by Ronald E. Goldstein, DDS, is an excellent primer. After the dentist has read it thoroughly and understood its contents, it should be placed in the reception area to help patients



Figs. 1 & 1a: A patient's worn dentition (l) is rejuvenated through complex bonding, resulting in a much-improved appearance (r).

reach informed decisions about treatment potential.

c) A subscription to *Reality*³ would be helpful. This publication is a product of the Esthetic Dentistry Research Group. It's edited by Michael B. Miller, DDS, who has a refreshingly iconoclastic approach to dentistry. A subscription provides 11 issues of the newsletter *Reality Now*, as well as a completely updated annual edition of *Reality*, which is a compendium of previous issues of the newsletter. The publishers have a policy of no commercialization and no advertising. This is a reliable source of product information, and will be of benefit to practitioners wishing to make informed choices on the materials used in cosmetic dentistry. It reviews research, rates materials, and provides information on invaluable techniques. It is also an excellent source of information for teaching staff.

d) Claude Rufenacht of Geneva, Switzerland, has written *Fundamentals of Esthetics*.⁴ The photography is excellent and the text scholarly. This book gives many insights into cosmetic dentistry.

e) *Esthetics of Anterior Fixed Prosthodontics*⁵ by Gerard J. Chiche, DDS, and Alain Renault, MDT, provides excellent information and should allow the average practitioner to proceed with some confidence in providing quality fixed restorations. The text is easily read and is illustrated with superb photography. It contains some excellent advice to help ensure success in most fixed cosmetic procedures.

Continuing Education

Postgraduate courses abound in cosmetic dentistry. Depending on the centre where the practitioner is located, most courses are reasonably accessible. Joining an organization such as the American Academy of Cosmetic Dentistry (AACD) is strongly suggested, both to the neophyte and the seasoned practitioner. Membership will provide access to the most ethical and respected postgraduate clinicians and lecturers. Joining this organization or any comparable group can help put in context much of the onslaught of information now being directed at dentists wishing to make informed decisions regarding treatment planning, techniques and materials.

The AACD has an accreditation program that gives practitioners who have met certain requirements an opportunity to be tested on their knowledge and skill in cosmetic dentistry, and if successful, to be awarded accreditation in cosmetic dentistry. Accreditation is a worthwhile goal and an excellent educational experience.

Study Clubs

Dentists interested in cosmetic dentistry have formed a variety of study clubs. A practitioner would be well-advised to seek out such a group, or to form one. Many mentors are available, and a group may choose to study with one or more of these individuals. The opportunity to exchange ideas and discuss successes and failures with one's peers is of inestimable value.

Whether a practitioner opts to pursue hands-on clinics, videotape presentations, courses or books, the selection of continuous education methods is a very personal decision. However, a solid background education in cosmetic dentistry will pay great dividends.

Photography

A good camera that can take excellent intraoral photographs is mandatory if cosmetic procedures are to be developed within the dental practice. There are many types of cameras available, all with varying degrees of ease of handling and use. The original Yashica Dental Eye is a good foolproof starter. Although it is no longer manufactured by Kyocera International, it can still be obtained. Today, however, it has been largely superseded by the Yashica Dental Eye II, which also offers ease of use, as well as many options to help improve the practitioner's intraoral photographic record taking.

Photography, used as part of the case history and in treatment planning, can be delegated to a dental assistant. Done properly, it can be valuable in meeting treatment objectives with the ceramist-technician. Patients often like to participate in the cosmetic dental process as well. Before and after photographs, given to the patient at the completion of treatment, can prove to be a good source of practice building. Duplicate photographs of successful cases should be placed in an album and displayed prominently in the reception area.



Fig. 2.

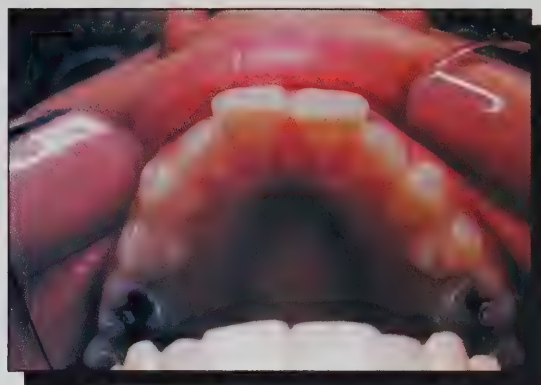


Fig. 2a.



Fig. 2b.



Fig. 2c.

Fig. 2, 2a, 2b, & 2c: A patient presented with lingually-inclined laterals and bulky centrals, which had heavily-curved distal surfaces (t). The patient's smile was improved by reducing the distal surfaces of the central incisors, and placing direct composite labial veneers to provide good arch form (b).

Chapter 17 in Dale and Aschheim's *Esthetic Dentistry*, written by Dr. Mark King, DDS, provides a definitive overview of dental photography. It should be required reading for anyone thinking about incorporating cosmetic dentistry into their practice.

Intraoral and extraoral video cameras can also be linked to computers, and can thus be used for storing images or to modify photographs to show two-dimensional mock-ups of possible cosmetic alternatives. This allows patients to visualize the potential for improvements to their smile.

Preoperative Clinical Considerations

Initially, it is advisable to set aside either a half or full day of practice exclusively for cosmetic dentistry. This allows the dentist and staff to "think cosmetic." Later, as this area of the practice grows,

the time allotment can be expanded.

The basic requirements for maximizing the potential for a successful cosmetic intervention are to have a current full-mouth series of intraoral radiographs, a current set of study models, an up-to-date periodontal evaluation, an occlusal evaluation, and a series of photographs. These should show full face, profile, front, left and right, in unretracted smile format, and should be taken at 1:2. A similar series of front, left, and right views, in retracted format at 1:2, as well as an intraoral occlusal view should also be taken. If the dentist is some distance from laboratory consultation, a 1:1 photograph of the teeth to be treated should be taken using a shade or shade tabs from the Vita shade guide, which is the most commonly-used standard. This provides the ceramist or technician with vital information

on any subtle coloration and the morphology of the teeth. In any intervention, these records help to remind both the dentist and the patient of the conditions that existed prior to the completion of the case, which may prove to be valuable in our litigious society.

A photograph modified with cosmetic enhancement, in conjunction with a white or diagnostic wax-up on a duplicate study cast, should be part of the case presentation. In an effort to maximize esthetics, try to avoid treating an odd number of anterior teeth. Inform the patient of the need to treat the centrals, laterals, cuspids and bicuspids in pairs to provide uniformity of color, anatomical symmetry and conformity to the lips. If a three-unit anterior bridge (porcelain fused to metal or all ceramic) is planned to replace a central incisor, consideration should be given to providing a porcelain ve-

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BRILLIANT CLARITY



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Figs. 3 & 3a: Complex bonding (r) was used to close multiple diastemae (l).

neer on the uninvolved lateral, or to replacing a crown on that lateral if one has been made previously. Any anticipated long-term concerns regarding occlusal imbalances, their correction, and ongoing aftercare with protective night guards should also be discussed. Equally important, fees and payment plans should be discussed with the patient and agreed to before treatment begins.

Treatment Considerations

In restructuring a practice to include cosmetic dentistry, the following points are worth noting:

a) A thorough working knowledge of up-to-date bonding techniques to both enamel and dentin is necessary. Professor A.J. Gwinnett gives the most definitive views on the recent developments and clinical applications in bonding in *Esthetic Dentistry Update* (April, 1994). His paper provides an overview that is invaluable and timely.

b) In establishing a working relationship with a laboratory, the dentist must convey as much information as possible about shade, brightness, highlights, stains, anatomy, and types of margins. Relevant details provided through photographs, diagnostic wax-ups, and computer enhancement (which some laboratories may offer) is equally important. A chairside consultation with the ceramist, who will provide the final indirect restoration, can save many re-makes and help foster a relationship of trust among patient, dentist and laboratory.

c) Always allow sufficient uninterrupted time to seat a case. Never assume that the fitting surface of the restoration received from the laboratory has been sandblasted, etched and silanated, even if this is required. In dealing with an all-porcelain case, after the try-in, the correct procedure is to clean out the try-in paste, sandblast, etch and silane prior to final bonding.

d) Direct bonding of veneers and other restorations require the same meticulous attention to step-by-step detail to ensure that there are no weak links in the chain. Any bonded restoration will fail if any one step is missed or any surface contaminated.

e) It is axiomatic that as well as an improved appearance, the patient should have a result that satisfies the basic criteria of sound dental principles, is easy to maintain, and promotes oral health. The finished result should survive the most fastidious scrutiny of both dentist and patient.

Conclusion

Cosmetic dentistry is emerging as a specialty in its own right. It requires an overview of dentistry that encompasses all of the other specialty disciplines. The cosmetic dentist should have a thorough knowledge of the strengths and weaknesses of all treatment modalities that he or she contemplates offering to patients.

Through cosmetic dentistry, the opportunity exists to provide patients with an enhanced service. Consultation with other colleagues and referral to other specialists, all

coordinated by the cosmetic practitioner, will help to achieve the best possible esthetic result for the patient. The longest journey begins with the first step. To those contemplating taking it, this article may serve as a gentle nudge. To those already on the path, may you find in this some affirmation. ■

Dr. David Philip is in private practice in Victoria, B.C. He has been awarded full certification by the American Academy of Cosmetic Dentists and is the Chairman of the board of governors of the University of Victoria.

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COSMETIC DENTISTRY



The Invisible Restoration

William G. Dickerson, DDS

In Webster's Medical Desk Dictionary, the word restore is defined as: "to bring back to or put back into a former or original state."

Today, thanks to a number of great advances in esthetic restorative dentistry, many esthetic-minded dentists are meeting Webster's standards, by restoring their patients' teeth to a fully natural-looking condition.

One of the greatest advances to date is the process of laboratory-fabricating composite material for use in inlays and onlays. Many practitioners have enjoyed considerable success with this material, with optimum esthetic results.¹⁻⁵ Since the indirect resin is bonded in place, it restores the tooth to its original, healthy strength. In effect, by incorporating this restoration into their armamentarium, these dentists are providing their patients with an invisible alternative.

The main disadvantage of composite material is the polymerization shrinkage factor. All composites shrink on curing. This physical side effect causes many subsequent problems, such as microleakage and gap formation, which can lead to postoperative sensitivity and failure.

Since the indirect resin is cured outside the mouth, the shrinkage

occurs in the laboratory. When the restorations are subsequently bonded in place with a highly-filled composite luting agent, polymerization shrinkage in the small gap of luting cement around the resin is insignificant. This method of composite placement has also eliminated the contact and interproximal contour development associated with the direct placement of composites, as well as incomplete polymerization at the base of the restoration. Degradation of the composite material, which is occlusally loaded before complete postoperative polymerization occurs, is also eliminated. The heat and pressure polymerization, as well as the fabrication process of indirect resin restorations, minimizes or eliminates these problems.

The technique described in this paper may be used with any indirect inlay/onlay system. However, the author has chosen to use Concept[®], which is the only heat- and pressure-cured resin inlay/onlay material commercially available at the present time. It is a highly-filled microfill that is 76 per cent inorganically filled by weight — a greater inorganic loading than is possible with direct microfilled composites. Since there is no pre-polymerization, the uniformly-

sized sub-micron filler is evenly dispersed throughout. Disparate particles can cause problems such as fractures. High heat (125°C) produces the greatest degree of polymerization possible in modern composites, with nearly an 85 per cent conversion, as well as a high compressive strength.⁶⁻⁸ At 80 psi, pressure curing helps to eliminate most or all of the voids present during direct condensation or indirect fabrication of restorations.⁹ The color stability is enhanced because of the higher degree of polymerization and pressure curing.¹⁰⁻¹¹

Concept will not abrade opposing tooth structure¹¹ and is color stable. It is radiopaque and appears on radiographs like enamel, allowing easy detection of secondary caries. A hidden bonus is the fluoride-containing radiopacifying agent, which has been shown to reduce secondary caries.¹²⁻¹³ The indirect resin restoration is easily repairable and even contacts can be added, without reprocessing.

A complaint frequently-expressed by practitioners is that this restoration is technique sensitive. But if care and attention to detail are judiciously followed, it is really not difficult. The following step-by-step guide is provided to help practitioners place indirect resin inlay/onlays successfully.

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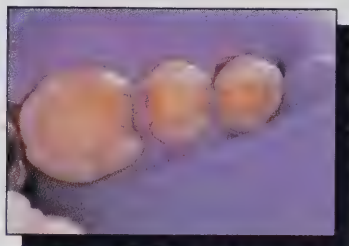


Fig. 1: Preparation with no lining necessary.

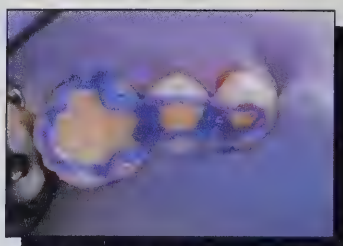


Fig. 2: Etching of enamel.

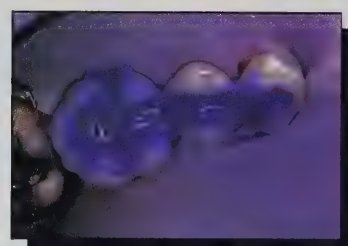


Fig. 3: Completing etching by including dentin.

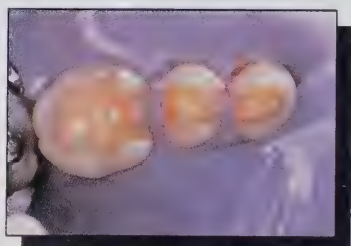


Fig. 4: Shiny appearance of dentin after primer placement is critical.

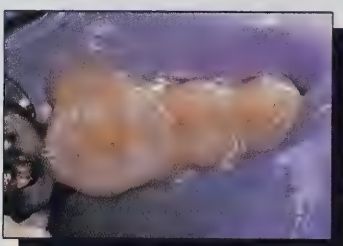


Fig. 5: Seating of the restorations.

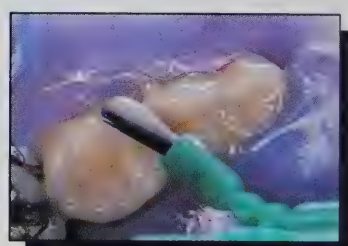


Fig. 6: Gross removal of excess luting cement before tacking down restorations.

Preparation

1. Anesthetize.

2. Select shade or shades to be used, then place the rubber dam. Shade selection is done before placing the rubber dam, as dehydration of the tooth will cause a whiter shade to be chosen. The shade should be taken from the cervical one-third of the buccal surface to create a restoration with depth. This will represent the dentin portion of the restoration, as the enamel shade of Concept is available in only one translucent shade. Proper laboratory communication is absolutely essential for maximum esthetic results.

3. Prepare the teeth, allowing at least 2.0 mm occlusal clearance and 2.0 mm width at the isthmus (**Fig. 1**). Avoid sharp internal line angles and undercuts. Glass ionomer or composite lining can be used to eliminate either of these conditions, although bond strengths are higher and microleakage less without glass ionomer linings.⁸ The Dickerson Indirect Resin Kit from Brasseler is recommended for the preparation and finishing of this technique. Make sure the proximal walls are tapered.

4. Pack cord, if necessary, for dry field or margin visibility.

5. Remove rubber dam and take bite registration.

6. Dry the tooth and take an impression with polyvinylsiloxane impression material. This material is preferred because it is re-pourable and the lab needs at least two models for fabrication of the inlay/onlay.

7. Remove the impression and wash the tooth with chlorhexidine. Don't wash it off, but dry with air. Place Fermit temporary material (Vivadent, Amherst, N.Y.). Have the patient bite and grind. Remove the excess material and have the patient grind again. Light cure the temporary material for 60 seconds and then check occlusion. If trimming is necessary, it is easily accomplished using a coarse diamond. Since this is a flexible temporary material, sensitivity may be a problem if the material is in premature contact. It is, however, a quick and easy temporary material to place, and it is also easy to remove and clean up prior to the cementation of the permanent restoration. The elimination of temporary cement has been shown to enhance the microleakage per-

formance of the permanent restoration.¹⁴

Cementation

1. Anesthetize if necessary.

2. Place rubber dam. This is mandatory. Studies show that bonding strength increases significantly with the use of the rubber dam.¹⁵

3. Remove temporary material and clean preparation with chlorhexidine on a bristle brush (for its antibacterial properties).¹⁶ Black staining caused by the microleakage of temporaries can be easily removed with hydrogen peroxide, if necessary.

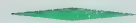
4. Dry the tooth and try-in the inlay/onlay. Add to contact, if necessary, by sandblasting the contact area, applying Special Bond II,^b and placing Dual Cement^b (If resin is a hybrid, Special Bond II is not necessary). Cure with light source and adjust if necessary. Occlusal adjustment is best done after cementation.

5. If internal surface on inlay/onlay was contaminated on try-in, clean with acid etchant. Wash and dry.

6. Etch tooth with 30- to 40-percent phosphoric acid. A matrix is recommended to prevent the

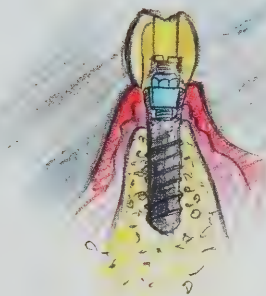
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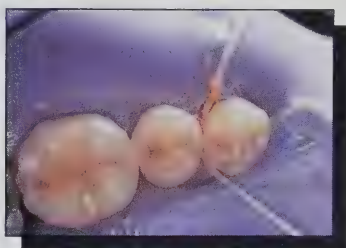


Fig. 7: Removal of interproximal excess luting cement after spot tacking restoration in place.

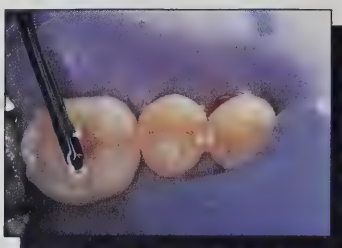


Fig. 8: Covering margins with glycerin to prevent oxygen inhibited layer from forming.

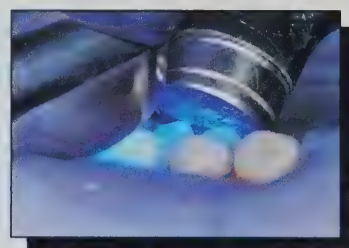


Fig. 9: Curing the luting cement by using two light sources.



Fig. 10: Photograph of finished, practically invisible, esthetic restorations.

etchant from contacting the adjacent teeth, which allows for an easy clean up of the cured luting cement. The total etch technique is used, etching entire preparation and 1.0 mm of unprepared enamel.¹⁷⁻²³ Place etch on enamel first (**Fig. 2**) then dentin (**Fig. 3**) so that it is rinsed off enamel after 15 seconds and dentin after 10 seconds. Lightly dry to ensure frosted appearance of enamel, thereby ensuring a successful etch, but do not desiccate.

Etching the dentin may be contrary to the manufacturer's directions. However, a study by Gwinnett and this author demonstrate hybrid layer formation with this technique, when using a particular bonding agent, and no hybrid layer following the manufacturer's instructions.²¹ The hybrid layer is necessary to obtain high bonding strengths and total dentinal sealing, and for microleakage elimination to occur.²⁴⁻²⁶

7. Using the wet technique, place Tublicid Red (for its antibacterial properties) to dampen the dentin. The wet technique creates less gap formation and deeper penetration of the resin into the dentin.²⁷⁻³⁰

8. Place the dentinal bonding agent of your choice. Proper selection of a dentin bonding agent is critical. A hydrophilic bonding agent is necessary. It is this author's belief that the bonding agent must be usable with the wet technique, since vital dentin can never be dried. Regardless of bonding material, the surface should be shiny after lightly drying to remove acetone and alcohol (**Fig. 4**).

9. Place Special Bond II on the internal surface of the inlay/onlay, if the resin is a microfill like Concept. This wets the surface, activates free radicals, and swells the surface for better bonding properties.

10. Mix and place composite luting agent in the preparation. This author uses Dual Cement for restorations with occlusal margins, because it's a relatively highly-filled microfilled luting cement with radiopacifying and fluoride containing properties, and extremely good wear characteristics. If the margins of the preparation are not on the occlusal surface, then Variolink^b is used for its higher bond strength properties. It also possesses the same fluoride-releasing properties.

11. Place inlay/onlay (**Fig. 5**), and while maintaining pressure, remove excess cement (**Fig. 6**). Spot cure with 2.0 mm light tip to secure restoration in place. Continue to remove excess with floss interproximally and explorer (**Fig. 7**). The key to easy finishing is to clean up excess cement before curing.

12. Place glycerin over the restoration surface before final curing (**Fig. 8**). The glycerin eliminates the oxygen inhibition layer from forming

and improves the wear characteristics of the luting composite.³¹

13. Cure restoration with large light tip. Curing with two lights is recommended, holding one buccally and one lingually (**Fig. 9**). Cure occlusally as well. I recommend a minimum of three minutes curing time, as studies have shown the inability of the light to reach deep in the preparation.

14. Use the finishing burs in the Dickerson Indirect Resin Kit and a curette to remove excess luting cement.

15. Remove rubber dam and check occlusion. Adjust and remove flash from around teeth. The Profin^c is used interproximally to trim excess cement.

16. Polish inlay using polishing cups and points.⁹ Final polishing is done with polishing paste.

The final result is a practically invisible restoration that is functionally sound and restoratively conservative, as well as being esthetically satisfying (**Fig. 10**). The density and the high filler content of Concept allows for the material to be used in a variety of situations. This author has placed over 3,500 such restorations with an insignificant number of problems and an extremely high level of patient satisfaction. Because of its tooth supportive properties, this restoration can be used to prevent or replace the need to crown many teeth.³²⁻³⁶ The high elastic modulus of some indirect resins will resist deformation in stressful situations. Therefore, most indirect resin restorations can be used in cusp build up as well as in reconstruction cases for functional occlusal compatibility.

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- c. Wiesman Technology, New York, N.Y.

FIRST AID TIP



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Frostbite makes the skin white, waxy and numb; freezing causes hardening. • Warm frostbitten area gradually with body heat; **do not rub** • Do not thaw frozen hands and feet unless medical aid is far away and there is no chance of refreezing. They are better thawed in hospital • If there are blisters, apply sterile dressings and bandage lightly to prevent breaking • Get to medical aid.



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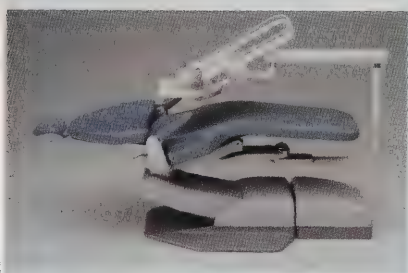
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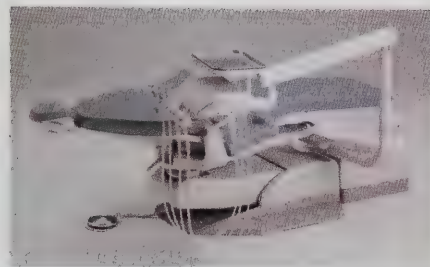
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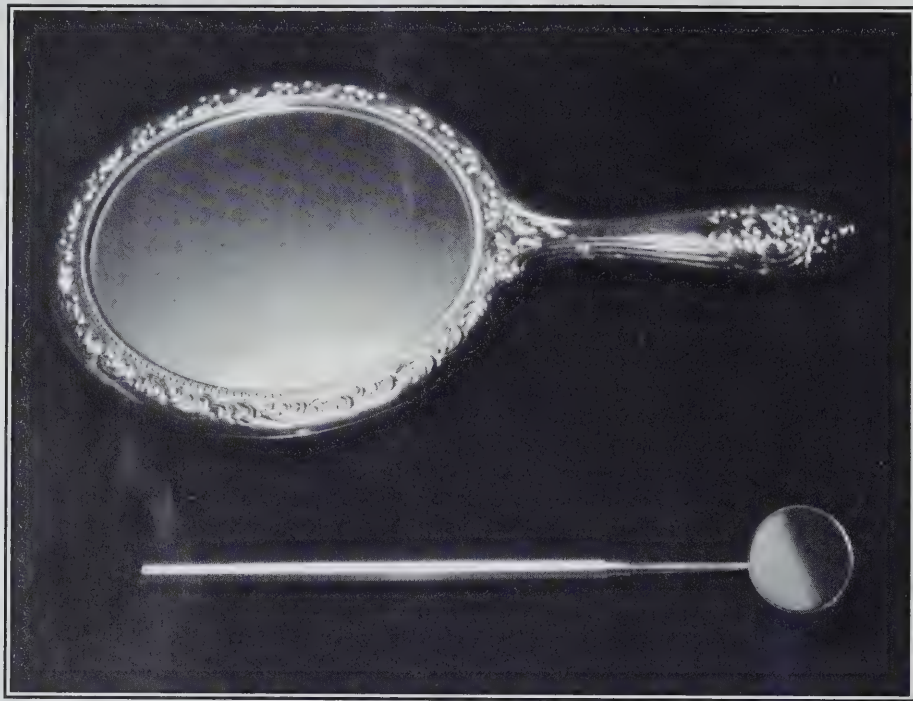
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Color Communication

George Freedman, DDS

The advent of cosmetic dentistry has highlighted the need for color communication between the dentist and the laboratory technician. While there is obviously no chromatic choice available when dealing with a gold inlay or an all-metal crown, today few patients will readily accept these less esthetic treatment modalities. Instead, the increasing use of ceramic restorations, particularly those fabricated without a metal substructure, is presenting dentists with yet another chairside challenge.

Success depends on the laboratory technician reproducing a restoration that matches exactly what the dentist has seen in the patient's mouth. This implies not only excellent shade perception on the part of the dentist, and superlative ceramic skills on the part the technician, but also an infallible means of communication between them.

Many methods have been described in the literature to facilitate this transfer of information, and many dentists are adept at using one system or another. The major drawback, however, is that today's shade guide systems require dentists to accurately describe a complex, multi-layered, multi-textured, three-dimensional color scheme in a space-limited, two-dimensional setting.

Dentists are taught color communication as a function of a three-headed monster. Hue, chroma, and value are certainly appropriate means for quantifying the color identity of a tooth, but their use is somewhat foreign to dental conceptualization. All too often, the dentist learns the underlying optical theories by attending a lecture or reading a published article, and then forgets them just as quickly through disuse atrophy.

Dentistry tends to condition practitioners to be very visually oriented. They find it difficult to work with subtractive and, especially, additive color systems, since any change in one of the components will simultaneously affect the others. Color description and/or correction is therefore a very complex and involved process. As such, the ideal color communication system should be as close to a What You See Is What You Get (WYSIWYG) format as possible.

Concerns in Color Communication

For the dentist, there are three potential areas of concern when it comes to shade determination:

Visualization

The way a dentist sees tooth colors depends on a variety of confusing factors. Fortunately, one can

attempt to eliminate or to standardize these factors.

For example, as individuals age, their eyes often become less adept at transmitting light and color.¹ The degeneration of the lens and the cornea may lead to a "yellowing" of the vision. If this occurs, the affected dentist may tend to provide restorations that are further into the yellow range than they should be. Fortunately, it may be possible to minimize this problem by using the younger eyes of trained staff members to assist in shade determination.

A percentage of the population is known to be partially or fully color blind, and it is very likely that some practising dentists are affected by this condition. Many may be unaware that their inability to distinguish fine nuances of dental coloration is physiological in origin. Again, it is easier to conscript the discerning eyes of staff members or dental colleagues than it is to be in a constant state of war with the laboratory technician.

Another point to remember is that the chromatic environment should be relatively neutral. Strong colors on the walls, equipment, or the patient's clothing will alter the dentist's color perception, and decrease the likelihood of obtaining good matching shades. Even tinted windows can radically change the

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Fig. 1: Esthelite-shade selector (EFOS, Mississauga, Ont.).



Fig. 2: Chromascop shade guide (Ivoclar, Amherst, N.Y.).

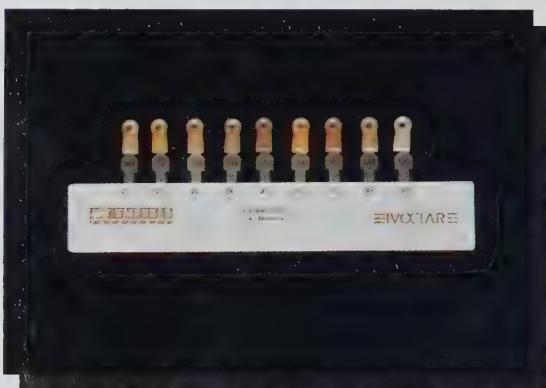


Fig. 3: IPS Die Material Shade Selector (Ivoclar, Amherst, N.Y.).



Fig. 4: Ceramic crown fabricated over colored die.

overall balance of color in an operator.

When it is impossible to eliminate the surrounding optical interferences, the dentist can create a micro-environment of balanced color. In this area, at the very least, shade taking is always accomplished under standardized conditions.

The Esthelite (EFOS, Mississauga, Ontario), for example, consists of a circular shade-matching opening surrounded by a ring of light at 5,500 K (Fig. 1), the standardized light "temperature" that laboratory technicians use in fabricating restorations. Used properly, the Esthelite provides the dentist and the technician with a common set of parameters to facilitate color communication.

Interpretation

Having visualized the color of a tooth, the next step is to interpret and record these observations in

communicable terms. Numerous shade guides are available to assist the dentist in standardizing color data. The one most commonly used is the Vita Shade Guide (Vita Zahnfabrik, Bad Sackingen, Germany). Its 16 basic shades offer a good representative sampling of the colors that dentists are most likely to encounter in matching natural teeth. Difficulties arise, however, when a tooth is out of range in either direction. The Vita Guide does not take into account the darker teeth and roots of the elderly population, nor the brighter teeth of the whitening/bleaching set. Another shortcoming of the guide is that there is no specific accounting for tooth translucency and maverick coloration.

It is interesting to note that most dentists keep their Vita Guide in the same A/B/C/D sequence used in the factory packaging. However, the accompanying instructions emphatically suggest that an order based on value (lightest to darkest),

rather than on color family groupings, is far preferable. Simply realigning the guide's bite tabs in the indicated sequence will make shade taking much easier and more accurate.

The recent development of the Chromascop Shade Guide (Ivoclar, Amherst, N.Y.) provides dentists with greater latitude in color interpretation (Fig. 2). There are 20 shades in the basic kit, which are divided into five color groups. The color groups are ranked in order from lightest to darkest. Importantly, the guide also includes shade groupings, such as reddish-brown and dark brown, which have largely been omitted from other kits.

The suggested procedure for the Chromascop is to select the color group first, and then choose the most appropriate shade grading within that group.

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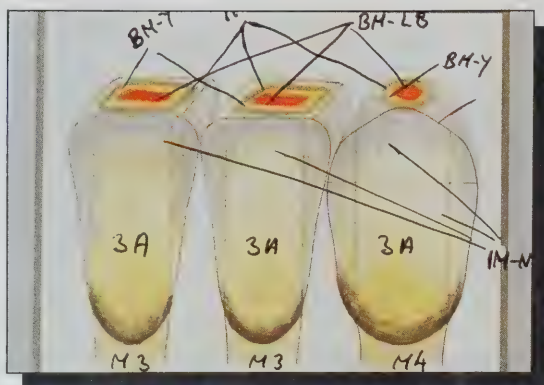


Fig. 5: Color Palette shade guide (Ivoclar, Amherst, N.Y.).



Fig. 7: Complex staining with Orbit LC.

lying tooth structure will also require greater attention. A ceramometal restoration will, of course, block out all color, as will a porcelain jacket crown placed with an opaque cement (zinc phosphate). But patients are now demanding, and receiving, less invasive and more esthetic dental rehabilitation.

Today's porcelain crown is often no more than 1.0 mm in thickness, and relatively translucent.³ Thus, the dentin providing the foundation for the restoration will also influence it chromatically. The ultimate color of the crown will be dependent not only on the shade of the porcelain used, but also on its translucence and the relative amount of underlying dentinal color transmitted through the bonding materials and the restoration. Therefore, it is important to make the laboratory technician aware of the coloration of the remaining tooth stump so that adequate chromatic compensation can be built into the crown.

The IPS Die Material Shade Selector (Ivoclar, Amherst, N.Y.) allows the practitioner to interpret the shade of the remaining tooth stump within a range of nine rather opaque and dark choices (Fig. 3). Using this information, the technician can create an appropriately-colored die, over which a correctly-shaded crown can be fabricated (Fig. 4).

Finally, the dentist and the technician must "align" their interpretive skills. The best methods for achieving this end include regular communication, occasional personal meetings to discuss both suc-

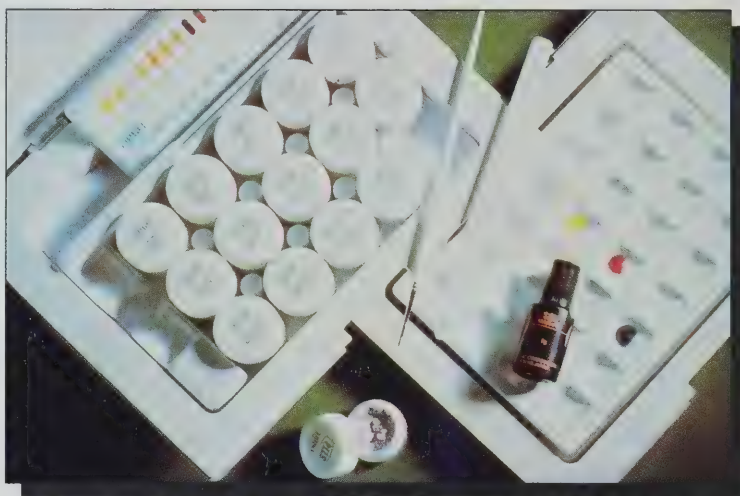


Fig. 6: Orbit LC custom staining system (GC America Inc., Chicago, Ill.).

cessful and unsuccessful cases, and joint participation in continuing education.

Description

Having mastered both the visualization and interpretation of the chromatic attributes of teeth, the next step is to establish a reliable means of transmitting this information to the technician in a readily comprehensible format. This process can also introduce inaccurate, incomplete, or misleading information into the color equation, and each data transfer adds to the potential inventory of inaccuracy.

Typically, the space allotted to color information on a laboratory prescription pad is less than 1.0 cm². By inference, this does not encourage the dentist to present a great amount of chromatic information. In fact, the large majority

of dentists use a single shade notation to indicate the desired coloration of the tooth. Given the distinct color gradients that exist in natural teeth⁴ (not to mention the maverick stains and variable translucencies), this descriptive method is hopelessly inadequate.

The obvious solution is to use a much larger paper surface that allows for a more detailed information transfer. The Color Palette (Ivoclar, Amherst, N.Y.) consists a series of 10 cm x 10 cm shade transfer cards pre-printed with the outlines of either a single tooth or a group of teeth (Fig. 5). The very size of these cards demands more than just a single color designation, and the dentist is literally forced to provide additional chromatic information. Three translucency indicators and six maverick stain pens pro-

vide additional latitude in tooth shade description.

The Color Palette is a great improvement on existing systems, but it is still an indirect form of the ideal WYSIWYG communication model. Its limitations include the need for color information to be transferred onto paper extraorally, and the ability of the technician to re-transfer this information onto the ceramic.

Actually, the system that approaches the WYSIWYG model most closely is the Orbit LC (GC America Inc., Chicago, Ill.) kit for staining and custom characterization (Fig. 6). There are 11 stain powders available that can be used individually or in concert. These powders are mixed with the light-cure liquid and then applied directly onto the ceramic. The resulting colors will not bleed into one another, allowing the desired effect to be controlled. Stains may also be layered to simulate complex natural appearances (Fig. 7).

When the dentist is satisfied with the matching effects created, the shading material is light-cured to the porcelain. When the porcelain is final fired, the light-cure liquid is burned off, and the stain is permanently fused to the ceramic.

The practitioner can actually try any number of shades and characterizations on the restoration. If they're unsuitable, they are readily removable prior to final firing. Equally important, the refractive index of the light-cure liquid is very similar to that of porcelain. The post-firing result — and excellent esthetics — can therefore be accurately established in a direct and readily visualized manner. This process can be used as a communication system between the dentist and the technician, or as a direct staining system by the dentist.

The Orbit system effectively eliminates most of the inaccuracy of color information transfer by allowing the dentist direct control of the ultimate coloration of the porcelain. There is no need for chromatic interpretation and two-dimensional description. The only variable that remains is the visualization ability of the dentist.

Conclusion

The newer color communication systems are approaching the ideal WYSIWYG format. Dentists are able to transfer more color information, more directly, and with greater confidence, providing the patient with a greater level of esthetic satisfaction.

Dr. George Freedman is an adjunct associate professor at Case Western Reserve University and director of the post-graduate programs in esthetic dentistry at Baylor College of Dentistry and SUNY, Buffalo, New York. He is a past-president of the American Academy of Cosmetic Dentistry, and lectures internationally on cosmetic dentistry, esthetics and dental photography. Dr. Freedman maintains a private practice in Markham, Ontario.

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Canadians at the FDI

continued from page 675

Dr. Thompson resigned as FDI treasurer at the Berlin Congress in 1991.

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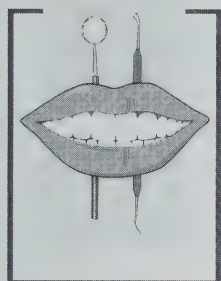
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COSMETIC DENTISTRY



Enamel and Gingival Abrasion: A Case Report Illustrating the Combined Esthetic Treatment of Fluorosis and Melanoplakia

William H. Liebenberg, B.Sc. BDS (Rand)

Introduction

Over the past decade, the dental profession has undergone exponential growth in the area of esthetic dentistry. Much of this growth has focused on restorative techniques to improve the appearance of discolored teeth.

Current restorative concepts can be divided into two categories: 1) directly-fabricated composite resin veneers; and 2) indirectly-fabricated veneers, such as preformed laminates or laboratory-fabricated acrylic resin,¹ microfill resin, or porcelain veneers.²

Thanks to the technological improvements brought about through research, these procedures carry a fairly predictable level of success if they are competently delivered. Invariably, however, the practicalities of comfort-zone therapeutics lead practitioners to select the most sophisticated treatment option available to meet the esthetic challenge. Unfortunately, this is not always in the patient's best long-term interest.

It is important to remember that these sophisticated esthetic restorative options require ongoing

maintenance that may include periodic refinishing.³ It follows, therefore, that one of the most critical elements to consider in selecting an esthetic option should be the patient's ability to maintain the esthetic result in the long term. Basic problems that can affect all esthetic restorations include discoloration or stain, poor tissue response and fracture.⁴

Over and above these "disadvantages," there are many instances where patients simply cannot afford sophisticated esthetic restorative treatment. In these financially-compromised situations, the predictability of esthetic intervention is that much more important. It may be necessary for practitioners to provide "compromised" treatment, within the framework of eradicating disease, while they attempt to enhance the patient's self image.

The range of compromised treatment options available today is dependent on a comprehensive understanding of patient values — a skill that is time related and not readily assimilated through continuing-education courses and publications. This case report de-

tails the combined conservative esthetic treatment of melanoplakia and fluorosis in a financially-compromised patient. The acceptable esthetic compromise depicted in **Fig. 9** was achieved without the use of any type of restorative material.

Case Report

A 25-year-old black female presented with an appearance-related main complaint (**Fig. 1**). The patient was from a rural area with a known history of fluorosis. She had been advised by a friend that her chances of finding gainful employment in an urbanized environment would be much improved if her dental appearance was enhanced. It was the patient's first-ever visit to a dentist, and her recorded request was to have the "brown marks removed" from her teeth.

The patient was healthy with no obvious oral pathology. A dental examination revealed no caries activity (confirmed with a complete mouth series radiograph). Despite her obvious oral hygiene deficiencies and a complete lack of any previous dental contact, her radiographs showed no evidence of bony attachment loss. However,

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Fig. 1: Clinical presentation of a 25-year-old female from an area with a known history of fluorosis on her first-ever dental visit. The attached gingiva is deeply stippled and exhibits varying degrees of brownish pigmentation. There is mild gingivitis and recessions of varying severity associated with supra- and subgingival calculus accumulations. The hypoplastic enamel was severely discolored on all surfaces of the teeth. No caries activity was detected clinically or radiographically.



Fig. 2: A completely-sealed, well-adapted and inverted rubber dam is mandatory during the delivery of all enamel color modification procedures. Orabase (Colgate-Hoyt Laboratories) is applied to the mucosal tissues to prevent contact with the bleaching solution. The importance of safety and the need for meticulous patient and staff protection cannot be overemphasized.



Fig. 3: The gingiva is well adapted and inflammation-free three months after initial periodontal therapy (plaque control, debridement and root planing). The patient's level of motivation and dexterity using the Bass technique and dental floss rendered any further periodontal treatment unnecessary. Two in-office bleaching appointments eliminated much of the brown staining on the mottled enamel.

mild gingivitis and recessions of varying severity associated with supra- and subgingival calculus accumulations were observed. The attached gingiva was deeply stippled and exhibited varying degrees of brownish pigmentation. This pigmentation, being physiological, was unremarkable and at this stage was not mentioned by the patient.

The hypoplastic enamel was severely discolored on all surfaces of her teeth. Various color modification techniques were discussed and the concept of oral-hygiene and its role in plaque control was introduced to the patient. Her initial treatment included plaque control, debridement and root planing. In fact, the patient's level of motivation and dexterity using the Bass technique and dental floss rendered any further periodontal treatment unnecessary. Two in-office bleaching appointments eliminated much of the brown staining on the mottled enamel (Fig. 3). At this stage, the patient asked about the feasibility of having her hypoplastic enamel defects, together with her gingival discolorations, completely removed.

The concept of gingival abrasion was introduced to the patient with due regard for the process of informed consent, as previous stud-

ies had tempered the long-term results with evidence of "repigmentation."

As it is impossible to determine the depth of an enamel defect before treatment, the patient was advised that the success of any further "conservative" enamel modification was unpredictable, and that it was likely that a bonded VLC microfilled composite restoration would be required. However, there would be nothing to lose by attempting acid-pumice correction first, if she wished. In summary, the treatment phases were effected as follows: a) initial periodontal therapy; b) initial enamel color modification, i.e. in-office bleaching; c) gingival "depigmentation" through gingival abrasion; d) final enamel color modification through enamel abrasion; and e) ongoing periodontal care, both home and professional.

Technique and Discussion

Diagnosis Of Fluorosis

Making a specific diagnosis of fluorosis is somewhat controversial, as a variety of conditions may produce similar features, and many environmental and physiological circumstances can make individuals more or less prone to dental

fluorosis.⁵ In this case, the unavailability of dental data from family members as well as incomplete knowledge of their ancestry further compromised a definitive diagnosis.

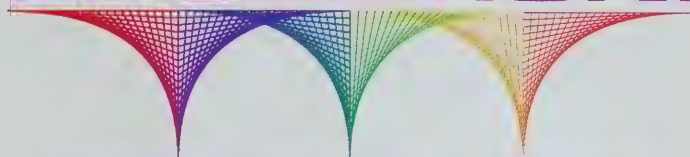
The systemic diseases that cause generalized enamel hypoplasia, such as renal and liver disorders involving calcium metabolism,⁶ were ruled out on the basis of the patient's excellent general health. A diagnosis of amelogenesis imperfecta is also reliant on clinical presentations and patterns of inheritance (although in recessive forms or new mutations there may be no previous history).⁷ Variants of ectodermal dysplasia were also excluded.⁸

The patient was from a rural area with a known history of fluorosis. This, together with the clinical presentation, formed the basis of the diagnosis of fluorosis.

Fluorosis Increasing

Endemic dental fluorosis results when there has been a history of prolonged exposure to food or water containing more than 1.00 ppm of fluoride ion during the maturation phase of enamel development. The most critical time for fluorosis development has been demonstrated to be a four-month

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Fig. 4: Gingival abrasion involves removing the epithelium of the pigmented areas with a high-speed handpiece and a large diamond bur with copious water lavage. The technique, although delicate, is relatively simple and requires minimum time and effort.

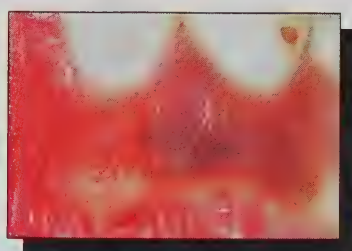


Fig. 5: Higher magnification of a de-epithelialized area in the third quadrant revealing the relatively "atraumatically" denuded lamina propria. The dexterity and precision high-speed handpiece control requirements make the general practitioner the obvious candidate to deliver this treatment.

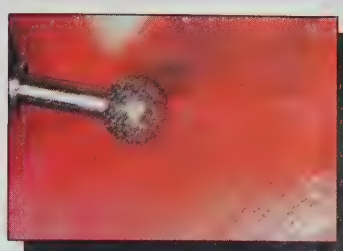


Fig. 6: Care must be exercised to use feather-light brushing strokes to remove the pigmented areas without concentrating the abrasive effort in one place. The three bleeding points depicted in this view are the result of unsteady bur movement and are contra-indicated. Water lavage, which would normally be used, has been stopped for photographic purposes.

period beginning at age 22 months, with a lesser risk resulting from continued exposure to excess fluoride for up to 36 months beyond this date.⁹

Since we live in an age of esthetic sensitivity, it is troubling that the prevalence of fluorosis has increased in Canada in recent years. The current prevalence is somewhere between 35 and 60 per cent in fluoridated communities, and between 20 and 45 per cent in non-fluoridated areas.¹⁰

Although it is peripheral to this case report, a brief review of the complexities of increased fluoride intake may be of interest. First, the problem of high fluoride levels in infant foods has, as yet, not been resolved in Canada.¹¹ In addition, the marketing of high-fluoride toothpastes (1,500 to 2,500 ppm) is increasing.

Children aged three to five years have been found to swallow as much as 0.25 g to 0.50 g of toothpaste per day, which is equivalent to swallowing 0.25 mg to 0.50 mg of fluoride.¹² Studies with Quebec preschoolers demonstrate that up to 50 per cent of the toothpaste they use each day is swallowed.¹³

Unfortunately, very little research has been done on the fluoride intake from food and drink

among children aged two to eight. One area of potential concern in this group is their consumption of soft drinks processed in fluoridated areas. Clovis and Hargreaves' landmark Alberta study,¹⁴ as reported by Burt,¹⁵ shows that soft drink consumption can be an inadvertent source of substantial fluoride intake, regardless of whether the community is fluoridated or not. For example, an analysis of the fluoride content of soft drinks and commercially-prepared fruit juices marketed in Camrose, a non-fluoridated community, found that they contained 0.8 ppm fluoride. A 12-ounce can of these drinks, made in nearby Wetaskiwin, which is fluoridated, would contain 0.28 mg of fluoride.¹⁴

While there is no evidence that professionally-applied fluoride gels or fluoride mouthrinses have contributed to the increase in fluorosis,¹⁶ there is good evidence to suggest that a strong risk of mild to moderate fluorosis may be associated with the use of fluoride supplements. Research has found that exposure to fluoride supplements, together with higher socio-economic status, increases the risk of developing fluorosis 28 times.¹⁷

Now that a measurable intake of fluoride from food, beverages and

toothpaste is well recognized, the use of fluoride supplements needs careful review.¹⁵ Readers are referred back to Clark's article in the March issue of this volume for the most recent CDA recommendations.¹⁸

Fluorosis and Colour Modification

Although hypoplasia of the enamel is not a general feature of fluorosis,¹⁹ in this case chronic intake of high levels of fluoride resulted in defective enamel matrix formation, and can be regarded as a form of enamel hypoplasia.²⁰ Such teeth typically have a hypomineralized, porous enamel subsurface. McKay and Black²¹ were the first to describe mottled enamel and its many variations of colors, ranging from white to yellow, light or dark brown, to black. The stained areas are often characterized as irregular in outline and varied in shape. In some cases, as depicted in this case report, the enamel itself may be pitted, chalky and flaky.

The pigmentation associated with the defects usually appears post-eruptively and then increases with age. At the time of eruption, then, the brown stain is usually not present, but arises from pigments



Fig. 7: Immediate postoperative view following gingival abrasion in the lower jaw. The denuded lamina propria was covered with a surgical stent lined with Orabase (benzocaine). The only postsurgical discomfort reported was from the unintentional bur penetration apical to tooth 33.



Fig. 8: Seventh day postoperative view following gingival abrasion demonstrating uneven healing. After a further five-week healing period, further enamel color modification is achieved using an acid-abrasive compound (Prema Compound, Premier Dental Products).



Fig. 9: Eight-month, post-gingival abrasion, clinical view. Note that no restorations have been placed. "Normal" enamel surface characteristics are successfully reestablished by hydrochloric acid-pumice surface abrasion. The patient is given the assurance that this enamel color modification is permanent. The gingival repigmentation process can be seen to be appearing as lightly pigmented spots in the upper jaw. The patient will decide whether retreatment is warranted when (if ever) the pigmentation returns to baseline levels in the future.

entering the hypoplastic enamel extrinsically. It is pertinent to note that this stain is incorporated predominantly in the outer third of the enamel.²² Whether present in the enamel or the dentin, intrinsic stains are potentially removable using "tooth whitening" agents, because of the inherent porosity and permeability of the enamel and dentin.²³

Tooth whitening techniques can be classified as either patient applied or professionally applied.²⁴ The active whitening/bleaching agent in patient-applied products is an oxygenating agent — either hydrogen peroxide or carbamide peroxide. Stains and discolorations that involve the outer layer of enamel to a depth of 0.1 mm or less are most susceptible to improvement.^{25,26} Deeper defects can be removed by a method combining acid and pressure abrasion. The safety of these methods has always been of concern. However, Baumgartner found no significant pulpal reactions, even when a substantial amount of enamel had been removed labially.²⁷ In this case, an acid-abrasive compound (Prema Compound, Premier Dental Products) and a 10:1 gear-reduction handpiece, as originally

described by Croll,²⁸ were used to remove the remaining superficial discolorations. The advantage of the acid-abrasive compound, as Croll has remarked, is that it gives enamel surfaces a superfine polishing as the layer of enamel is removed. The freshly-polished surface then develops a shiny, glass-like texture — resembling a highly-polished microfill composite restoration — as the tooth subsequently remineralizes. In addition, treated teeth appear remarkably plaque-free after their enamel surfaces are micro-abraded.²⁹

At the three-month observation period, this case demonstrated additional color improvement as depicted in **Fig. 9**. This is presumably a feature of the beneficial optical alterations associated with ongoing enamel remineralization.³⁰

Superficial enamel coloration defects are not as effectively removed with a bur, as the surface form is often visibly altered. However, in this case some of the hypoplastic defects required a more extensive enamel abrasion than could be obtained using pressure abrasion with the Prema Compound. A fluted carbide finishing bur was used at high speed, and then the remaining enamel was

polished with fluoridated prophylaxis paste. Neutral sodium fluoride gel was then applied to the enamel for three minutes.

Physiological Melanin Pigmentation and Its Removal

Dark discoloration of gingival tissue can be caused by a variety of local and systemic factors such as Addison's disease.³¹ The clinical color ranges from a light pink to a dark brown or bluish black, and overt melanoplakia varies from isolated spots to a band-like distribution.³² Differential diagnosis of a solitary, small, circumscribed darkly pigmented lesion includes amalgam tattoo, junctional nevus, melanoma and a local area of hemosiderin deposition after trauma.³³ Melanoplakia is common in dark-skinned races, and diagnosis is seldom a problem. Individuals with fair skin will not generally demonstrate overt tissue pigmentation. Clinicians are reminded that oral melanoplakia does occur in other races (besides Negroes),³⁴ and that there is a great variation between individuals of the same race.³⁵

The melanocytes are dendritic cells with no desmosomes or ton-

ofilaments, and are therefore unattached to the surrounding epithelial cells. Melanocyte cells are located in the basal cell layer, with the melanin being transferred outward to the prickle cell layers. They convert tyrosine to melanin, and in fair-skinned individuals are generally hypoactive. It is generally accepted (although not fully understood) that pigmented areas are present only when these melanin granules are released from the melanocytes and phagocytized by the keratinocytes.³⁶

Previous surgical procedures aimed at eliminating pigmented areas include free gingival grafts, as well as the removal of the entire attached gingiva by "push back" procedures. The first procedure requires an additional surgical site, while the second is associated with alveolar bone loss, prolonged healing by secondary intention, and excessive pain and discomfort caused by exposure and denudation of the underlying bone.³⁷

It follows from the unique epithelial distribution of the melanocytes that de-epithelialization should remove the dark patches of pigmentation. This method was introduced by Farnoosh, who performed the surgery on his own discolored gingiva using topical anesthesia and a diamond bur in a high-speed handpiece.³⁷ This is also the method used in this case report (Figs. 4-6).

The literature reports varying patterns of postsurgical repigmentation of gingiva following de-epithelialization.^{38,39} Although the exact mechanism of repigmentation is not known, it is likely that the melanocytes from the surrounding epithelium proliferate and migrate into the depigmented areas. This is consistent with the findings of Bergamaschi and others, who observed that the repigmentation process progressed centripetally inward from wound peripheries.⁴⁰ In one study, Perlmutter and Tal observed repigmentation after seven years, while another subject revealed no repigmentation after eight years.³⁸ Hirschfeld and Hirschfeld found that pigmentation returned in only three of 23 cases.⁴¹

In a recent, five-year, clinical and transmission electron micro-

scopic study in humans, Bergamaschi and others conclude that "the gingival resective procedure, if performed primarily for cosmetic reasons, will not be of permanent value because pigmentation tends to return to baseline values."⁴⁰ It is this author's opinion that the "esthetic" gingival abrasive treatment option should be reserved for those individuals who display unusually dark gingival pigmentation, and who seek unsolicited esthetic treatment for the condition. The advantage of this conservative abrasive technique is that it can be done repeatedly in the same area without limitation and without causing any permanent damage.³⁷

Conclusion

The aim of this article is to stimulate some thought about our "instinctively" sophisticated and technologically-orientated solutions to esthetic problems. This report makes no attempt to introduce new techniques. The recent "perio-esthetic" approach to treatment has ensured that the color of teeth, and their relationship to the surrounding gingival architecture, are accepted as complementary. There is, however, a lack of emphasis with regards to the coloration of the gingival tissues. This case report has detailed gingival depigmentation as a simple "inexpensive" adjunct to an esthetic challenge.

This report provides a brief overview of physiological pigmentation and the increasing prevalence of fluorosis. Among the numerous excellent reference works dealing with enamel color modification, the books by Croll⁴² and Feinman, Goldstein and Garber⁴³ are essential reading for general practitioners who wish to add this therapeutic modality to their esthetic service. The articles by Farnoosh³⁷ and Bergamaschi et al⁴⁰ are likewise essential references for those willing to explore gingival depigmentation for esthetic purposes.

The author concedes that a more aggressive, less predictable, totally irreversible but more costly treatment would more than likely have been provided had the patient presented with a different social and financial profile. But would it have

been more beneficial in the long term? ■

Acknowledgements: I would like to acknowledge my chairside assistant, Ms. Kerry Cheyney, for her assistance with the operator procedures, and Ms. Mayke Bester for the initial periodontal therapy. Thanks are also extended to Ms. Marsha Maslove at the CDA library for her kind assistance in gathering the references for this article.

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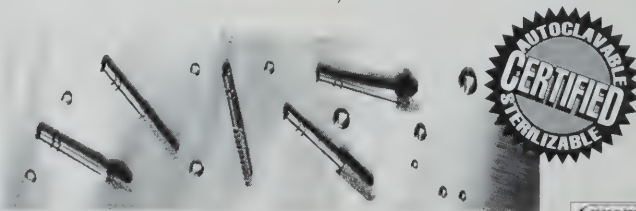


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The Effectiveness Of Three Different Strengths Of Chlorhexidine Mouthrinse

D. Christopher Clark, DDS, MPH

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ABSTRACT

Dental caries in dentate elderly patients may be controlled with chlorhexidine. The purpose of this study is to establish the effectiveness of two low-concentration chlorhexidine mouthrinses in reducing the microbial counts of cariogenic bacteria in a sample of institutionalized elders. Stimulated saliva samples from all subjects before treatment produced counts greater than or equal to 105 colony-forming units (CFU)/mL of lactobacilli and/or mutans streptococci. Treatment consisted of daily rinsing with 4.0 mL of mouthrinse before bed for 14 days. Bacterial counts were re-assessed two weeks after commencing treatment. The mean reduction in mutans streptococci counts in subjects receiving the regular-strength chlorhexidine mouthrinse (Group B) was significantly greater than for subjects using either of the low-concentration rinses (Groups A and C). These findings failed to demonstrate the effectiveness of the lower-concentration mouthrinses (Groups A & C).

SOMMAIRE

La carie dentaire chez les personnes âgées est un problème qu'on peut contrôler avec la chlorhexidine. Cette étude a pour objet de déterminer l'efficacité de deux rince-bouches à faible concentration de chlorhexidine pour réduire la numération microbienne des bactéries cariogènes chez un échantillonnage de personnes âgées vivant en institution. Les échantillons de salive stimulée chez tous les sujets avant le traitement a donné des quantités supérieures ou égales à 105 unités formant colonie (CFU) par mL de *Lactobacillus* et/ou de *Streptococcus* mutans. Le traitement a consisté à se rincer quotidiennement la bouche au coucher avec quatre mL de rince-bouche pendant 14 jours. On a réévalué la quantité de bactéries deux semaines après le début du traitement. La baisse moyenne du nombre de *Streptococcus* mutans chez les sujets ayant reçu le rince-bouche au chlorhexidine de force ordinaire (Groupe B) a été de beaucoup supérieure à celle des sujets qui ont utilisé des concentrations plus faibles (Groupes A et C). Ces données n'ont pas démontré l'efficacité des rince-bouches à faibles concentration (Groupes A et C).

Introduction

With the aging of the population, the focus of dental health promotion and preventive dentistry efforts is shifting from school-aged children to older people. There are several reasons for this. First, many people are retaining their natural teeth into their later years.¹ Second, the oral health expectations of dentate elders appear to be greater than those of denture wearers. Third, it is apparent that this group will be at increased risk to oral disease, perhaps most importantly dental caries.^{2,3} And finally, the relationship between oral health and systemic well-being may be more important than currently thought.⁴

For reasons that are not altogether clear, dental care appears to be a low priority among many elderly residents of long-term care (LTC) facilities. Residents rarely receive more than emergency treatment for dental pain and discomfort.^{5,6}

In addressing the requirements for caries prevention programs in LTC facilities, consideration should be given to their limited resources and the practicality of intervention. An effective program to prevent dental caries should be directed at high-risk residents, and it should be

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convenient to apply and easy to monitor. Chemotherapeutic intervention appears to hold the greatest promise in this regard, and chlorhexidine is currently the most widely-tested and effective antibacterial agent available for the prevention and control of dental caries.⁷

Chlorhexidine in the form of daily mouthrinses, dentifrices, sprays, gels and lozenges can reduce the amount of supragingival plaque in children and in both young and old adults.⁸⁻¹⁰ In gel form, chlorhexidine will decrease the number of mutans streptococcus and lactobacilli in the dental plaque of children and young adults, and it has been used effectively to control oral diseases in both handicapped and elderly patients.¹¹⁻¹³ Although associations between the number of cariogenic bacteria found in plaque and saliva and the incidence of dental caries have been weak,^{2,14,15} a sustained reduction in the number of cariogenic bacteria is still considered to be an important objective in the prevention of dental caries.¹⁶ Furthermore, while there is little question about the effectiveness of chlorhexidine in controlling the number of cariogenic bacteria over the short term, the magnitude and duration of its effectiveness are unknown. Problems of taste, staining and potential toxicity still tend to discourage its long-term use. Consequently, problems with compliance appear to diminish the potential effectiveness of chlorhexidine products. Presumably, however, compliance could be improved if the problems of taste and staining were overcome.

The purpose of this study is to determine the ability of three different strengths of chlorhexidine mouthrinses to reduce the number of intraoral bacteria, i.e. streptococci and lactobacilli. Apparently, low-concentration chlorhexidine mouthrinses offer the advantages of improved taste and reduced staining. Likewise, if the rinse is ingested — as it might be by residents of extended care facilities — the use of low-concentration rinses would minimize other potential side-effects.

Table I

Differences In the Counts (Logarithmic) Of Streptococcus Mutans After Product Use

Group	N	Mean Change	Standard Deviation
Treatment A 0.5% phenoxyethanol and 0.05% chlorhexidine	10	-0.75	0.66
Treatment B 0.12% chlorhexidine	9	-1.20	0.97
Treatment C 0.5% phenoxyethanol and 0.025% chlorhexidine	8	-0.34	0.88

Table II

Differences In the Counts (Logarithmic) Of Lactobacillus After Product Use

Group	N	Mean Change	Standard Deviation
Treatment A 0.5% phenoxyethanol and 0.05% chlorhexidine	10	-0.80	0.65
Treatment B 0.12% chlorhexidine	9	-0.56	1.13
Treatment C 0.5% phenoxyethanol and 0.025% chlorhexidine	8	-0.20	0.61

Methods

This study was a randomized controlled clinical trial, where subjects and care-givers were blinded to group assignment. Subjects accepted into the study were stratified by institution and level of care. From the resulting stratifications, subjects were allocated randomly into one of the following three study groups:

- *Treatment A:* 0.5 per cent phenoxyethanol and 0.05 per cent chlorhexidine;
- *Treatment B:* 0.12 per cent chlorhexidine;
- *Treatment C:* 0.5 per cent phenoxyethanol and 0.025 per cent chlorhexidine.

Thirty patients — all more than 75 years of age and residents of intermediate- or extended-care facilities in Vancouver — were selected to participate in the study. All subjects were disabled, with at least one major physical (e.g. rheumatoid arthritis, stroke) or psychological (e.g. dementia) disorder. All subjects required assistance with normal activities, were unable to

attend adequately to their oral hygiene, and had abundant quantities of plaque deposits on their teeth. To be eligible for the study, they had to have minimum counts of lactobacilli and/or mutans streptococci, i.e. greater than or equal to 10⁵ colony-forming units (CFU)/mL. Microbiological samples were taken twice — once at baseline and again two weeks after rinsing commenced.

Rinsing was supervised and/or carried out by the charge nurse as part of medication dispensing. Once per day (at night before bed), each patient received 4.0 mL of mouthrinse. The use of the rinse was prescribed in the physician's orders by the principal investigator to help ensure good compliance. In-service training was provided to the nursing staff to encourage correct use of the product.

Data were coded, verified and entered into standard computer files. To stabilize the high variability in the microbiological counts, data were subjected to logarithmic transformation (log base 10). Group means for the microbiologi-



cal counts were tabulated and subjected to an ANOVA to test for significance of differences. One-way analysis of variance on the logged variables was carried out on the differences between the log of the final two-week counts and the different versions of the baseline measurements, i.e. average of two baseline-counts, maximum of two counts, and first and second counts only.

Results

Of the 30 subjects who began the study, three stopped rinsing for various reasons. All subjects had poor oral hygiene and clinical evidence of gingivitis. They produced stimulated saliva samples that yielded, on average, 3.00×10^6 CFU/mL of mutans streptococci and 1.10×10^6 CFU/mL lactobacilli prior to rinse application. The chlorhexidine rinse used in Group B reduced the mean counts of mutans streptococci by more than 10 times (Table I). However, the reductions in mutans streptococci counts observed with the rinses used in Groups A and C were significantly less than the reduction observed in Group B. Reductions in lactobacillus counts were not significantly different following the use of the rinses for two weeks (Table II).

Discussion

The results of this small investigation show that lower-concentration chlorhexidine mouthrinses, in combination with low concentrations of phenoxymethanol, failed to significantly reduce counts of cariogenic bacteria in saliva. In addition, no synergistic effects were demonstrated with this compound. This would suggest that in the absence of a synergistic effect, the lower-concentration rinses failed to deliver the minimum inhibitory concentration of chlorhexidine to the disease site.

Several explanations exist to explain why chlorhexidine sometimes fails to improve either a clinical or microbiological evaluation. First, some of the studies reported are essentially case studies, where a small number of patients are put on a regime for a set time period

and changes are recorded. Often no controls are used, and frequently the actual regime and/or dosage may be new or untested.

To demonstrate the anticipated dose-response relationship of chlorhexidine and certain oral bacteria, Cummings et al¹⁷ examined the relationship between the volume of solution and the concentration of the chlorhexidine compound used, and compared different regimes for clinical effectiveness. Bonesvoll¹⁸ also examined the relationship between volume, concentration and retention of chlorhexidine. Their results indicated that as larger volumes of solution are used, lower concentrations of chlorhexidine are necessary. Recently, Jenkins and Addy¹⁹ compared the effectiveness of 0.10 and 0.20 per cent rinses in reducing plaque accumulation and decreasing gingivitis and staining potential. The 0.10 per cent rinse demonstrated significantly higher plaque and gingivitis scores and a lower stain score. Although the study was of short duration and the sample size was small, taken with other results in this area, it would appear that concentration of the antimicrobial agent is important. In another example, Lucas and Lucas²⁰ tested the effectiveness of 0.02 and 0.04 per cent chlorhexidine rinses on gingivitis, and found no effect. Likewise, the study by Cummings and Loe¹⁷ showed that both clinical outcome and the pattern of tooth staining are influenced by delivery methods.

The literature on chlorhexidine reflects considerable disparity in the volumes, concentrations and vehicles used by various researchers, making comparisons and generalizations between studies quite difficult. Suffice to say that some of the negative results described above may have resulted from using a solution or system that failed to deliver the minimum inhibitory concentration of chlorhexidine to the disease site.

The literature also suggests that preventive programs involving the education of the staff and/or institutionalized residents of nursing homes result in little more than short-term improvements in oral

hygiene.²¹⁻²⁴ This study was designed to focus on high-risk dentate elders who could not attend to their own hygiene. Within the context of long-term care, empirical evidence suggests that medications are dispensed diligently by the nursing staff, although the staff are unable to provide effective oral hygiene on a regular basis. Therefore, the intervention tested in this study relied largely on the potential therapeutic effects of a medication to reduce the risk of dental caries for individuals in this population.

This study suggests that a daily application of 0.12 per cent chlorhexidine can reduce the levels of cariogenic bacteria in elderly subjects. An informed nursing staff will usually support efforts to improve oral care, but they are more likely to provide this service if it is managed in a similar way to other medical problems and it is easy to administer. Attempts to improve oral hygiene, reduce sugar consumption, and stimulate or replace salivary function in elderly LTC residents require an intensive effort, which may explain why they are frequently unsuccessful.²²⁻²⁴ The direct and practical intervention used in this study may be more appropriate to the needs of the elderly population, and to the limited resources within many LTC facilities. ■

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Action

Ultracaine (articaine HCl) has been shown to block conduction by interfering with the process fundamental to the generation of the nerve action potential, namely the large transient increase in the permeability of the membrane to sodium ions that is produced by a slight depolarization of the membrane.

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Ultracaine is indicated for infiltration anesthesia and nerve block anesthesia in clinical dentistry.

Contraindications

Ultracaine is contraindicated in patients with a known hypersensitivity to local anesthetics of the amide group; in the presence of sepsis near the proposed injection site; in patients with severe shock; in patients with any degree of heart block; in patients with existing neurologic disease and in patients with severe hypertension.

When **Ultracaine** with epinephrine is used, the caution required of any vasopressor drug is in order.

Warnings

Methemoglobinemia

As with other local anesthetics, **Ultracaine** is capable of producing methemoglobinemia: this has been observed when an intravenous regional anesthesia technique is used. **Ultracaine**, when used as directed in dental procedures, was not associated with methemoglobinemia.

Usage in Pregnancy

Animal studies have not demonstrated teratogenic or embryotoxic effects of **Ultracaine**. However, safe use in pregnant women has not been established. **Ultracaine** is unlikely to be transferred to the mother's milk since it is rapidly decomposed and eliminated.

Precautions

Resuscitative equipment and drugs should be readily available when any local anesthetic is used. The safety and effectiveness of local anesthetics depend upon proper dosage, correct technique, adequate precautions and readiness for emergencies. **Ultracaine** should be used cautiously in persons with known drug allergies or sensitivities, or suspected sensitivity to the amide-type local anesthetics.

Patients with Special Diseases and Conditions

The p-hydroxybenzoic acid methyl ester contained in **Ultracaine**, as a preservative, has a hydroxy group in the para-position. This fact should be borne in mind in the case of patients with para-group allergy.

Adverse Reactions

Reactions to **Ultracaine** are characteristic of those associated with amide-type local anesthetics.

A major cause of adverse reactions to this group of drugs is excessive plasma levels, which may be due to overdosage, inadvertent intravascular injection, or slow metabolic degradation. Other causes of reactions to these local anesthetics may be hypersensitivity, idiosyncrasy, or diminished tolerance.

Dosage and Administration

As with all local anesthetics, the dosage varies and depends upon the area to be anesthetized, the vascularity of the tissues, the number of neuronal segments to be blocked, individual tolerance and the technique of anesthesia. The lowest dosage, needed to provide effective anesthesia should be administered.

	Infil- tration	Nerve Block	Oral Surgery
Ultracaine DS forte	0.5-2.5 mL	0.5-3.4 mL	1.0-5.1 mL
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It is recommended not to exceed 7 mg/kg body weight in adults.

To date, **Ultracaine** has not been administered to children under 4 years of age, nor in doses greater than 5 mg/kg in children between the ages of 4 and 12.

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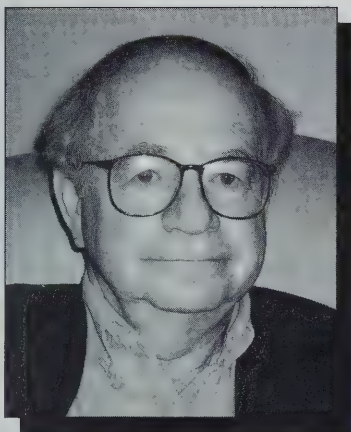


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Another Update For Canadian Dentists Regarding Chlorhexidine Varnish Therapy For the Prevention of Dental Caries

D.W. Lewis, DDS, DDPH, M.Sc.D., FRCD(C)

I am concerned about the current promotion of chlorhexidine varnish therapy (CVT) in Canada. In a recent letter to the editor (Chlorzoin. *J Can Dent Assoc* 60:94, 1994), I congratulated the president of the Canadian Dental Association, Dr. Ray Wenn, on his earlier column (Another Dental Miracle. *J Can Dent Assoc* 59:875, 1993), in which he raised questions about the effectiveness of Chlorzoin in reducing dental caries, its cost-effectiveness, and the appropriate target population of patients in Canada. I thought these were fundamental questions to which dentists and their patients deserved answers. The answers were not provided in the lengthy letters of reply written by Dr. Sandham, one of the developers of Chlorzoin, or by Mr. Perry, the president of Knowell Therapeutic Technologies, Inc. (Response From One Of Chlorzoin's Inventors; Response From Knowell Therapeutic Technologies, Inc. *J Can Dent Assoc* 60:94-96, 1994).

I did appreciate Dr. Sandham's reference to me in his letter, where he indicated I was taking the high road on this. However, his attribution to me that a whole battery of clinical trials would be essential before marketing Chlorzoin is illu-

sory as, consistent with standard statistical reasoning and clinical trial protocol, I merely stated that the results of the one trial of dental caries reduction with high risk children that was under way at the time, if successful, could only be generalized to similar children. Nevertheless, as Mr. Perry pointed out, his company is supporting a variety of different clinical trials to document whether CVT brings about dental caries reductions. While this is commendable, the fact remains that this CVT product was marketed without evidence from even one randomized clinical trial in Canada to show that it significantly reduces dental caries in any patient population. (One wonders what those marketing Chlorzoin will do if some or all of these proposed trials indicate that dental caries is not prevented: remove it from the market?) And since any consideration of cost effectiveness must await proof of product effectiveness, the answers to two of Dr. Wenn's original three questions are apparently unavailable. Although I have rephrased these fundamental questions somewhat and added additional material, they remain the subject of this commentary.

Besides the importance of these questions and the encouragement

of colleagues in my own and other Canadian universities, a paper by Dr. Ben Balevi in the January issue of the *Journal* (Ketorolac versus Ibuprofen: A Simple Cost-Efficacy Comparison for Dental Use. 60:31-32, 1994) mainly influenced my decision to write this. Dr. Balevi's paper concerned a widely advertised product. His message, taken from the beginning and end of his paper, covers all new dental materials, agents and procedures:¹

"As dentists, we are regularly inundated with promotional literature on the newest dental therapies and products. For the most part, this commercial marketing consists of large, four-color, glossy spreads, which typically summarize the efficacy of a product in one or two lines (i.e. the slogan), complemented by convincing graphs and photographs. These marketing methods can be impressive...It is much easier to centre our attention on a visually-pleasing product advertisement than on a dry scientific study. But as dentists, we have an obligation to our patients to evaluate the advantages of new therapies as they become available. In doing so, it is imperative that we base our judgements on the objective findings of properly-performed scientific investigations rather than

on subjective marketing or a clinician's perception."

In this paper, four questions concerning CVT will be addressed:

1. Is there proven effectiveness in dental caries reductions with CVT in Canada?
2. Subsequent to proven effectiveness, will CVT be cost effective?
3. Regarding the appropriate target patient group for CVT, how accurate is Cariescreen?
4. Is there satisfactory evidence for the single initial application of CVT?

1. Proven Effectiveness In Dental Caries Reductions In Canada

It is not sufficient to show that risk factors can be modified. Experimental evidence, based on randomized clinical trials, that CVT leads to clinically-significant improvement in the health outcomes of patients must be provided. The most important clinical outcome for patients and dentists is reduced or controlled dental caries. As stated earlier, to date there have been no randomized comparative trials anywhere demonstrating that this particular CVT product reduces dental caries significantly. For our purposes, these reductions must be based on contemporary Canadian experience regarding dental caries prevalence.

The claims that other chlorhexidine-based products significantly reduce caries² are correct. However, all of these studies have taken place in Europe, particularly in the Scandinavian countries, where reported mean dental caries incidence is many times higher than in Canada. So what is the contemporary Canadian experience?

Using the latest Ontario data available (1990) as an example, from the time they were six, average 13- and 15-year-old children had accumulated about 1.7 and 2.3 DMF teeth, or about 3.4 to 4.6 DMF surfaces. In the 1982 Swedish study³ used in Dr. Sandham's recent paper² to show the caries benefits of chlorhexidine, the untreated control group of typical children (i.e., not chosen because

of high risk) accumulated 9.6 new carious surfaces in just three years, on average, between about ages 13 and 16 years. Even ignoring caries prior to age 13, this is nearly two and one-half times more decay in only three years than Ontarians of similar age got in seven to nine years, or, on an annualized average basis, 6.4 times as much caries per year. Although some other provinces have higher caries experience than Ontario, none has an average experience one-half as high as these Swedish children.

Given the great decline in dental caries in Canada over the past 20 to 30 years, the appropriateness of applying the very high Scandinavian data to the Canadian situation is questionable for all but a very small proportion of Canadians with similarly high caries potential. But CVT is not recommended for all patients. Indeed, although the overall caries decline due to the chlorhexidine gel was 56 per cent in the Swedish study, the only statistically-significant difference in caries occurred in the group with an initial mutans streptococci level of $\geq 1,000,000$ CFU per mL of saliva (and not in the 250,000 - 500,000 group currently being recommended for CVT in Canada). For these "millionaire" adolescents, the self-applied chlorhexidine gel group had 3.9 new carious surfaces, while the untreated group had 20.8 new carious surfaces over three years.

In Canada, CVT would likely also be an effective caries preventive in persons with such high caries. However, very few of these children (with seven new carious surfaces per year) are found in Canadian schools and dental practices. We have previously reported relatively higher caries attack in Native children compared to other Canadians, but their caries is much lower than that of these Swedish adolescents. Based on the 1990 Ontario prevalence data mentioned earlier, less than 0.2 per cent (i.e. two out of 1,000 children) had caries at the levels of this high-risk Swedish group.

So, other than some very special high-risk groups, such as those experiencing (or about to experience) xerostomia due to medications,

Sjogren's syndrome or radiation of the major salivary glands,² the main target group for receiving CVT in Canada to control high dental caries is very small, especially when one considers the availability of fluorides and sealants, which are long-standing, proven preventives.

Based on an outcome criterion of dental caries prevention, dentists will have to decide if it is realistic to evaluate the other groups of Canadians who potentially could receive testing for mutans streptococci and CVT, as is currently being suggested. Two quotes from current advertisements and/or brochures state: "The treatment has application for more than 60 per cent of your practice..." and "up to half of patients visiting Canadian family dentists have mutans streptococci bacterial infections which put them at risk of caries." Certainly, current Canadian dental caries experience does not, in my opinion, justify numbers like these.

2. Cost-Effectiveness Of CVT In Canada

Consideration of whether CVT is cost effective in Canada must await proof of its effectiveness in reducing caries. Certainly, for patients similar to the Swedish adolescents with the highest levels of mutans streptococci — those who have seven new decayed surfaces per year, on average — good cost-effectiveness ratios would be achieved in Canada with CVT. However, where the rate of decay is less than seven surfaces per year, the cost effectiveness ratio for CVT in Canada may be a range, rather than a fixed number applicable to all cases. Whether the avoidance of, say, three new decayed surfaces annually would be cost-effective if the cost of testing and CVT were \$140 per year is a consideration for the dentist in consultation with the patient. But very few patients are getting even three new decayed surfaces annually.

3. Accuracy of Cariescreen

All diagnostic tests are proxies for the "truth" or truly correct diagnoses. Rarely are such tests completely accurate; that is, false negative and false positive errors regu-

larly occur. To be practically useful for dentists, diagnostic tests must have high predictive validity. This means, for example, that a patient with a positive (high) test result should develop high levels of the disease in question, and a patient with a negative (low) test result should develop low levels of the disease. Although no standards exist, one hopes for at least 80 per cent accuracy, which, however, still means that false positive and/or false negative errors totaling 20 per cent will occur (i.e. one in five decisions is wrong).

The predictive values (PVs) of many of the diagnostic tests for mutans streptococci, and the plate counts themselves, have been tested for the accuracy of their predictions of high (PPV) and low (NPV) incidence of dental caries. In a review for the 1992 meeting of the International Association for Dental Research, Van Houte⁴ concluded that these tests are poor ("not possible") predictors of future caries for individuals. A similar conclusion has been reached by many previous reviewers and researchers. Van Houte also noted that these tests are poorer predictors of high disease than low (i.e. $PPV < NPV$), and that societal caries declines tend to result in lower positive predictive values (PPVs).

Cariescreen was apparently not reviewed by Van Houte, but other tests for mutans streptococci were.⁴ The PPVs for these tests in the European studies were higher, about 40 per cent, than in the two North American studies, where dental caries is lower. In one U.S. study, the PPVs were 28 - 38 per cent, and in the other, just 14 per cent. Since the PPV of a test gives the probability that the individual patient's positive test result is correct, the reasons for the pessimism about the usefulness of the mutans streptococci tests in predicting high future caries activity are very evident, since all of these PPVs are worse than a coin flip. It, at least, would give a probability of 50 per cent, which is still a far cry from the desired 80 per cent, however.

The PVs of Cariescreen have not been well studied. Leverett and co-workers very recently reported that

the Spearman's correlation between the laboratory plate counts of mutans streptococci and Cariescreen scores were moderate in size, 0.55 to 0.67,⁵ which does not bode well for their predictive validity. Most studies have predicted caries activity, not plate counts, so the data from Leverett and others are unusual. This may explain one reason for the poor predictive validity of the diagnostic tests for mutans streptococci — they use the wrong predictor, namely future caries activity.

Cariescreen is a more convenient and simple way of determining mutans streptococci than the longer and more elaborate method of agar plate counts in the microbiological laboratory. Since the mutans streptococci counts of Cariescreen are a proxy for these more elaborate "gold standard" laboratory counts, the accuracy of Cariescreen in the first instance might be determined simply by comparing its counts with laboratory plating counts obtained using the same sample of saliva. I have seen PVs based on such Cariescreen and plate count data, and, although they are not close to 80 per cent (PPV), they are higher than many of the other tests reviewed by Van Houte.

Whatever the predictive values (PPV, NPV) for Cariescreen turn out to be, dentists should be told what they are for various levels of caries prevalence, since, otherwise, dentists and patients may believe that they are close to 100 per cent. This is important. For example, consider the case where the dentist determines that a patient's Cariescreen count is 500,000 or 1,000,000 and, based on this finding as well as disease prevalence and other patient characteristics, he or she proposes CVT. Would the dentist make the same recommendation if he or she knew that the PPV, or probability that this count is accurate, was 38 per cent, or less, like other North American tests involving mutans streptococci.⁴

4. Satisfactory Evidence For A Single Application Of CVT

In support for the single application of CVT that is currently recom-

mended for those with 250,000 - 500,000 CFU mutans streptococci per mL of saliva, Sandham gives his analysis of data² from the study, published in 1992, of 27 patients destined to undergo orthodontic treatment.⁶ He describes how all 27 of these adolescents achieved, one week after their first CVT, reduced levels of mutans streptococci below the target of 250,000 CFU per mL of saliva.² However, he did not disclose in this analysis that these 27 patients also received CVT at the beginning of weeks two, three and four, and not just at the beginning of week one. (Four weekly applications have been the traditional method for CVT in the studies completed by Sandham and co-workers, and this protocol was also followed in the orthodontic study.)

Justification for the single CVT is based on the pronounced drop in mutans streptococci in the 27 adolescents one week after their first CVT application. However, what assurance is there that the continued suppression of mutans streptococci at the end of weeks two, three and four and, as reported, for six months thereafter,² was not due entirely or partly to the CVT provided at the beginning of weeks two, three and four? The plain and simple answer is that no such assurance can be provided. Satisfactory evidence for only a single initial CVT can not be determined from a study that provided four weekly applications.

Dentists should be made aware that the recommended single CVT application has not yet been proven. It may or may not be satisfactory. However, only an appropriately-designed (but relatively simple and cheap) study can answer this definitively.

Summary

Some of the reasons for my belief that CVT has been marketed prematurely have been described. They include the belief that the only really important outcome from the patients' and dentists' perspectives is proven reductions in dental caries. Associated with this is the need to recognize that, using such a criterion, the numbers of

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Studies conducted with human subjects and animals demonstrate that any ingested chlorhexidine gluconate is poorly absorbed from the gastrointestinal tract. Excretion of chlorhexidine gluconate occurred primarily through the feces (approximately 90%). Less than 1% of the chlorhexidine gluconate ingested by these subjects was excreted in the urine.

INDICATIONS AND CLINICAL USE: Peridex is indicated for use as part of a professional program for the treatment of moderate to severe gingivitis, and for management of associated gingival bleeding and inflammation between dental visits. For patients having coexisting gingivitis and periodontitis, see PRECAUTIONS.

CONTRAINDICATIONS: Peridex should not be used by persons who are known to be hypersensitive to chlorhexidine gluconate or other formula ingredients.

WARNINGS:

USE IN PREGNANCY: Reproduction and fertility studies with chlorhexidine gluconate have been conducted. No evidence of impaired fertility was observed in male and female rats at doses up to 100 mg/kg/day, and no evidence of harm to the fetus was observed in rats and rabbits at doses up to 300 mg/kg/day and 40 mg/kg/day, respectively. These doses are approximately 100, 300, and 40 times that which would result from a person ingesting 30 mL (2 capfuls) of Peridex (0.12% chlorhexidine gluconate) per day. Since controlled studies in pregnant women have not been conducted, the benefits of use of the drug in pregnant women should be weighed against possible risk to the fetus.

NURSING MOTHERS: It is not known whether this drug is excreted in human milk. In parturition and lactation studies with rats, no evidence of impaired parturition or of toxic effects to suckling pups was observed when chlorhexidine gluconate was administered to dams at doses that were over 100 times greater than the dose which would result if a person ingested the entire recommended dose of Peridex (0.12% chlorhexidine gluconate) on a daily basis.

USE IN CHILDREN: Since the safety and efficacy of Peridex in children has not yet been fully established, the benefits of its use should be weighed against the possible risks.

PRECAUTIONS:

1. For patients having coexisting gingivitis and periodontitis, the absence of gingival inflammation following treatment with Peridex may not be indicative of the absence of underlying periodontitis. Appropriate treatment of periodontitis is therefore indicated.

2. Peridex may cause staining of oral surfaces such as the film on tooth surfaces, restorations, and the dorsum of the tongue. Stain will be more pronounced in patients who have heavier accumulations of unremoved plaque.

Stain resulting from use of Peridex does not adversely affect the health of gingivae or other oral tissue. Stain can be removed from most tooth surfaces by conventional professional prophylactic techniques. Additional time may be required to complete the prophylaxis.

Discretion should be used when treating patients with exposed root surfaces or anterior facial restorations with rough surfaces or margins. If natural stains cannot be removed from these surfaces by a dental prophylaxis, patients should be excluded from Peridex treatment if the risk of permanent discoloration is unacceptable. Stains in these areas may be difficult to remove by dental prophylaxis and on rare occasions may necessitate replacement of these restorations.

3. A few patients may experience a slight and temporary alteration in taste perception while undergoing treatment with Peridex. Most of these patients accommodate to this effect with continued use of Peridex.

4. For maximum effectiveness the patient should avoid rinsing their mouth, eating or drinking for about 30 minutes after using Peridex.

ADVERSE REACTIONS: No serious systemic reactions associated with use of Peridex were observed in clinical testing. However, some adverse reactions have been reported in studies with Peridex or other chlorhexidine-containing mouth rinses. The most common side effects associated with chlorhexidine gluconate oral rinses are (1) an increase in staining of oral surfaces, (2) an increase in supra gingival calculus and (3) a slight and temporary alteration in taste perception. (see PRECAUTIONS). Epithelial irritation and superficial desquamation of the oral mucosa have been noted in studies of children using 0.12% chlorhexidine gluconate which were reversible upon discontinuation.

There have been rare cases of parotid gland swelling and inflammation of the salivary glands, in patients using Peridex.

SYMPTOMS AND TREATMENT OF OVERDOSAGE: Ingestion of 30 or 60 mL of Peridex (0.12% chlorhexidine gluconate) by a small child (10 kg or less body weight) might result in gastric distress, including nausea, or signs of alcohol intoxication. Medical attention should be sought if more than 120 mL of Peridex is ingested by a small child or if signs of alcohol intoxication develop.

DOSAGE AND ADMINISTRATION: Peridex therapy should be initiated directly following a dental prophylaxis. Patients using Peridex should be reevaluated and given a thorough prophylaxis at intervals no longer than six months; they should be referred for periodontal consultation as necessary.

Recommended use is twice daily oral rinsing for 30 seconds, morning and evening after tooth brushing. Usual dosage is 15 mL (marked in cap) of undiluted Peridex. Peridex is not intended for ingestion and should be expectorated after rinsing. Rinsing the mouth, eating or drinking should be avoided for about 30 minutes after using Peridex.

The suggested initial course of therapy is 3 months, at which time patients should be recalled for evaluation. At the time of the recall visit, the dental professional should:

- Evaluate progress, remove any stain, and reinforce proper home care techniques.
- If gingival inflammation and bleeding is controlled, discontinue Peridex therapy and recall the patient in three months to assess gingival health.
- If gingival inflammation and bleeding persists, continue Peridex therapy for an additional 3 months and schedule a three-month recall for evaluation.
- Evaluate for evidence of epithelial irritation, desquamation and parotitis.

The following generally accepted grading scheme may be of use in evaluating the severity of gingivitis.

Loe and Silness GINGIVAL INDEX (GI)

Grade	Description
1	Normal gingiva, no inflammation, no discoloration, no bleeding.
2	Mild inflammation, slight color change, mild alteration of gingival surface. No bleeding.
3	Moderate inflammation, erythema, swelling, bleeding on probing or when pressure applied.
4	Severe inflammation, severe erythema and swelling, tendency toward spontaneous hemorrhage, some ulceration.

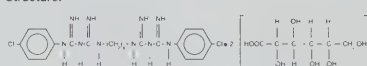
An occasional missed dose can be ignored if the patient is generally compliant with the prescribed regimen.

PHARMACEUTICAL INFORMATION DRUG SUBSTANCE

Proper Name: Chlorhexidine gluconate (U.S.A.N.)

Chemical Name: 1,1'-hexamethylene bis [5- (p-chlorophenyl) biguanide] di-D-gluconate

Structure:



Molecular Weight: 897.8

Description:

Chlorhexidine has basic character and exists in the di-cationic form at physiologic pH. The two protonic positive charges become somewhat localized on the bi-guanide portion of the molecule. Both pKa's are reported as 10.78 ± 0.06. The gluconate salt is soluble in excess of 70% (w/v) in water at 20°C.

At 19–21% w/v chlorhexidine gluconate solution is colourless to pale straw-coloured and is odourless to almost odourless (British Pharmacopoeia).

COMPOSITION: Peridex contains 0.12% chlorhexidine gluconate in a base containing water, alcohol, glycerin, PEG-40 sorbitan di-isostearate, flavour, saccharin sodium and FD&C Blue #1 Dye.

STABILITY AND STORAGE: Store above freezing (0°C).

INCOMPATIBILITIES: None known.

SPECIAL INSTRUCTIONS: None.

AVAILABILITY OF DOSAGE FORM: Peridex oral rinse (0.12% chlorhexidine gluconate) is supplied as a blue liquid in 475 mL amber plastic bottles with child-resistant dispensing closures.

Store above freezing (0°C).

REFERENCE

1. Grossman E., Reiter G., Sturzenberger OP, et al. Six-month study of the effects of a chlorhexidine mouthrinse on gingivitis in adults. *Journal of Periodontal Research*. 1986;21(suppl 16):33-43.

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patients who may truly benefit from CVT in Canada are small — much smaller than those who promote the testing for and use of CVT appear to infer. Once proven clinically effective, the cost effectiveness of CVT for different patient groups must be demonstrated.

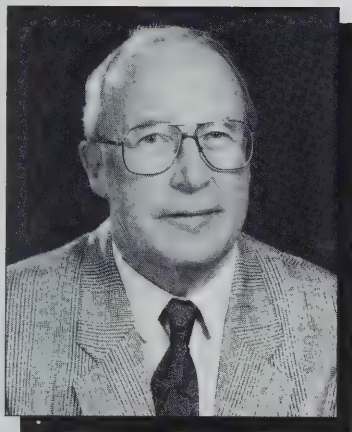
I also think that studies to determine Cariescreen's accuracy in terms of predictive values for the "gold standard" plate counts of mutans streptococci should be undertaken. These results should then be given to dentists to help them in their decisions about using CVT in their practices, and if this decision is affirmative, in their discussions with patients for whom they decide CVT will be beneficial. Similarly, the effectiveness of the single application of CVT must be proven by a properly-designed study, since the current justification is inadequate for so important an issue.

Finally, dentists should have been provided with all of this basic information before CVT was marketed in Canada. ■

Dr. D.W. Lewis is a professor in the department of community dentistry at the University of Toronto.

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Response to Dr. Lewis's Criticism of Chlorhexidine Varnish Therapy

H.J. Sandham, DDS, M.Sc., PhD

In his criticism of Chlorzoin varnish therapy, Dr. Don Lewis raises a number of concerns with respect to what he believes is unknown about this innovative treatment, and implies that the dentists currently using it are doing so based on "subjective marketing or a clinician's perception" rather than on "the objective findings of properly-informed scientific investigations." This, I submit, is not true.

There is sufficient information available today to support the use of Chlorzoin therapy by dentists. In fact, it was this information that led the Bureau of Prescription Drugs of Canada's Health Protection Branch (HPB) to approve the marketing of Chlorzoin in September of last year.

Therefore, in an attempt to balance Dr. Lewis's viewpoint on Chlorzoin therapy, I will answer his statements and emphasize some of the information supporting the use of this treatment.

Evidence For the Effectiveness Of the Reduction Of Streptococci For Preventing Dental Caries

The Swedish studies, as Dr. Lewis admits, have persuasively shown the effectiveness of chlorhexidine gel in preventing dental caries. Furthermore, these studies

demonstrated, rather convincingly, that the decrease in caries was associated with the suppression of mutans streptococci. The other significant question, then, is whether Chlorzoin therapy can suppress mutans streptococci to the same extent as chlorhexidine gel.

Since the studies undertaken by our group over a 10-year period have been cited elsewhere,¹ it seems unnecessary to repeat them here. However, I would like to point out that in a recent review of chlorhexidine therapy and dental caries, Dr. Claes-Goran Emilson states that: "Of the various antimicrobial agents and methods tested, the most persistent reduction of mutans streptococci has been achieved by the chlorhexidine varnishes, followed by gels and mouthwashes."²

Dr. Emilson, of the University of Göteborg, Sweden, is recognized worldwide as one of the pioneers in the development and testing of the chlorhexidine gel therapy. Nevertheless, he rates it second to the chlorhexidine varnish therapy.

Quality Of the Scientific Literature Presented to Dentists

The marketing of Chlorzoin has been accompanied by an unprecedented effort to educate dentists and their staff, and to supply them

with extensive information. It is easy to dismiss these educational efforts as "marketing hype," and to infer that dentists are incapable of evaluating the scientific content of the presentations. The great bulk of the information, however, including all of the key scientific points, originates from peer-reviewed, world-class international scientific journals.

More specifically, the work done by my group for over a decade has passed the highest level of rigorous inspection via the scientific peer review of both my competitive grant applications and of every article I have submitted for publication. Our work was also reviewed, and earned the approval, of HPB. Therefore, it seems inappropriate to dismiss the scientific basis of our work and the scientific and regulatory hurdles that Chlorzoin has already overcome, as Dr. Lewis has apparently done.

Clinical Caries Trials On Chlorzoin

It is Dr. Lewis's opinion that the Canadian government should not have approved Chlorzoin for marketing until controlled clinical caries trials had been carried out. However, the reality is that without previous marketing approval, it would have been economically impossible, particularly for a new Canadian company, to complete

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such trials. Furthermore, the lack of such trials prior to marketing approval is far from being a precedent in dentistry or medicine. In fact, its marketing initiatives are enabling Knowell Therapeutic Technologies Inc. to finance well-controlled clinical caries trials, which are being carried out expeditiously.

New Drugs Need New Protocols

It seems that Dr. Lewis's concerns may relate more to the protocols suggested for using Chlorzoin than to the qualities of the drug itself. The marketing of Chlorzoin began only months ago, following governmental approval based on the drug's proven safety and efficacy for controlling oral colonization by mutans streptococci. Because of its newness, however, there are still untested and unsolved questions about Chlorzoin. For example, more work is needed to determine the optimal treatment protocol for each of the various prospective target populations, who would benefit most from the therapy and, just as important, the optimal protocol or method for using Chlorzoin and Cariescreen in each situation. This is no different from many new drugs — they all must find their way into appropriate clinical use.

Patient-related factors that must be considered in devising suitable protocols include patient age, mutans streptococcal levels, the number of retentive areas in the mouth (e.g. orthodontic patients), and saliva flow rate. For each of these variables, various protocol-related factors must be examined, including the optimal number of initial Chlorzoin applications and the optimal frequency of follow-up microbiology measurements.

Until appropriate protocols are established for the great variety of clinical situations, guidelines in the form of suggested protocols have been drawn up based on the current best judgement of scientists and dentists who have experience with the drug. These protocols are not inviolate but, not unexpectedly, will evolve to the optimal form, which can then be tested in controlled clinical caries trials.

Testing the optimal protocol for the use of an agent via a clinical trial is just as important for demonstrating the benefit of a therapy as the properties of the agent itself.

Caries Rates In Canada and Sweden

Dr. Lewis argues that the caries rates of Canadians are not high enough for Chlorzoin to be effective on more than a very small portion of the population. He bases this on the premise that only patients with an extremely high rate of caries and a mutans streptococci count of one million per mL saliva can benefit from Chlorzoin. He does not mention that the caries scores in the Swedish study, unlike those in the Canadian surveys, include decalcified areas (white spots) with intact surfaces and lesions that are detectable only on radiographs.³

Perhaps more germane, however, is the fact that Dr. Lewis disputes the use, in both Swedish gel therapy and Chlorzoin therapy, of a target level of 250,000 mutans streptococci per mL of saliva to indicate the need for treatment or re-treatment, and the potential for the therapy to benefit the patient. Justification for this threshold level was provided in the Zickert group's 1983 paper,⁴ which showed that the caries rates of patients were directly proportional to the length of time that their mutans streptococcal counts were above 250,000 per mL of saliva. Hence, the objective of the Swedish treatments was to keep the mutans streptococcal level below 250,000 per mL of saliva, the same as is advocated in Knowell's marketing literature for Chlorzoin. This would include a markedly greater percentage of the Canadian population than is claimed by Dr. Lewis.

Cost-Effectiveness

Dr. Lewis also stated that the cost-effectiveness of Chlorzoin against caries should be calculated on the basis of its effectiveness in Canada. How does one calculate the value of a caries lesion that has been prevented from occurring? Does the patient value it more or less highly than does the dentist?

Many therapies and procedures in dentistry and medicine have been marketed and/or used for years without undergoing assessment of their cost-effectiveness, with this use based on the clinical judgement of the practitioner and the willingness of the patient to pay for the procedure. Examples are advice on the dietary control of caries, mouthwashes, dental public health programs, dental implants, cosmetic dentistry and, in other realms of medicine: hormonal therapy and prosthetic hips. I do not believe that the lack of cost-effectiveness studies should be erected as a barrier preventing access of either dentists or patients to Chlorzoin.

"Accuracy" Of Cariescreen In Predicting Caries

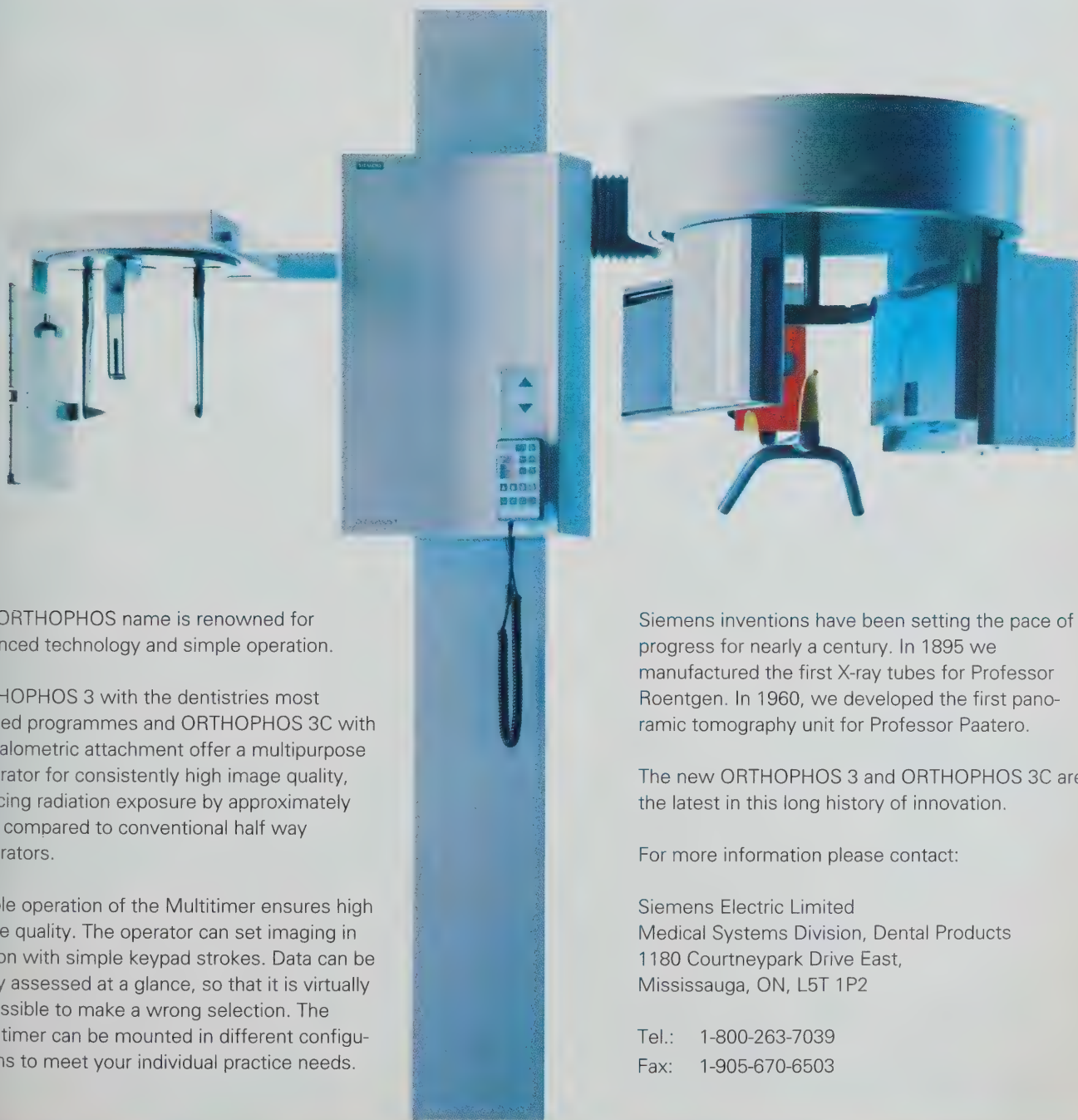
Dr. Lewis is concerned about Cariescreen's lack of "accuracy" for predicting caries, in particular that it (like most caries tests) has a low Positive Predictive Value (PPV). The flaw in this argument is that any single microbiological (or any other) test cannot predict caries with a high degree of accuracy because of the multifactorial causes of caries. Among the risk factors that must be considered are diet, salivary buffering capacity and flow rate, tooth morphology and tooth fluoride content. Any one test, including Cariescreen, characteristically measures only one of these risk factors, so one should not expect the PPV for caries in such individuals to be as high as 80 per cent.

In emphasizing the importance of the PPV of caries tests, Dr. Lewis seems to have minimized the value of the Negative Predictive Value (NPV), which is the ability of the test to correctly predict that disease will not develop. The NPV is more closely related than the PPV to the actual aim of Chlorzoin therapy, i.e. to reduce one of the risk factors, mutans streptococci, and maintain it at levels too low to be consistent with caries activity. Again, because of the multifactorial nature of the disease, Cariescreen, like other caries tests, rates much better on NPV than on PPV.

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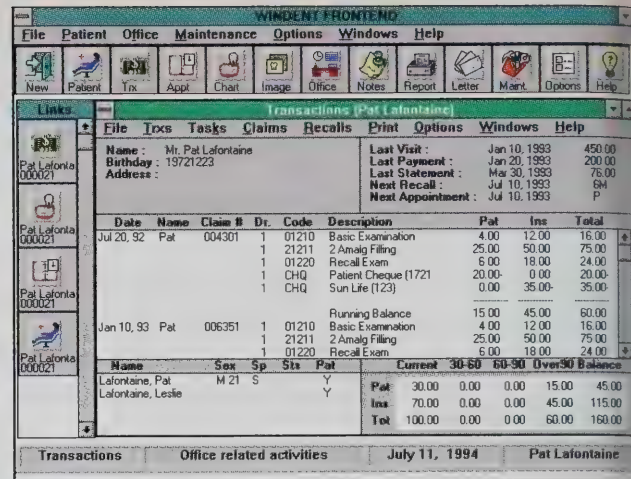
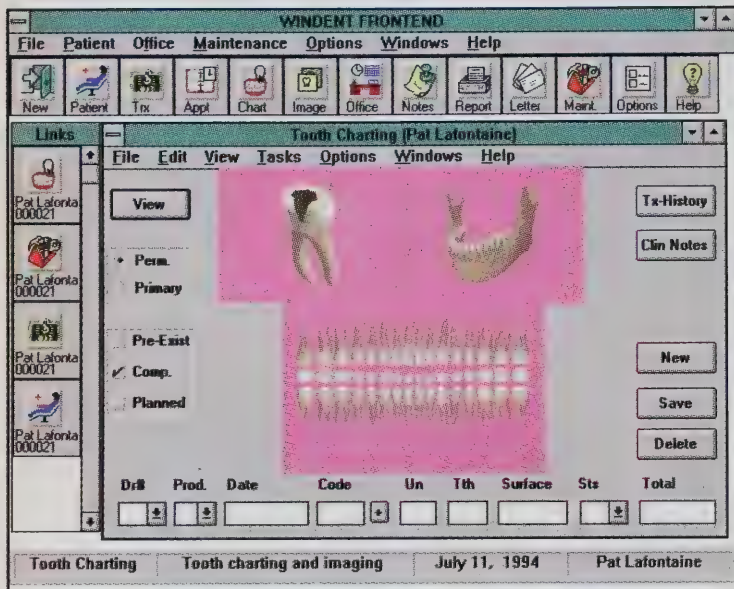
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Effectiveness Of a Single Application Of Chlorzoin

Dr. Lewis says that, in citing data for a single Chlorzoin application from our clinical trial with orthodontic patients,⁵ I "did not disclose" that the patients subsequently received three additional Chlorzoin applications.¹ His statement is wrong, since I did disclose it in the legend of figure 5, in a recent article published in *Ontario Dentist*.¹ Furthermore, the additional applications are irrelevant to the discussions. The fact is, the single application at baseline caused a drop in the mean count of mutans streptococci from 550,000 per mL of saliva at baseline to 23,000 one week later (and prior to the second application). Much more important, this reduction in count was comparable to that obtained by the Swedish subjects⁴ after two weeks of daily five-minute applications of chlorhexidine gel in trays, following which their streptococcal levels typically remained low for up to three months.

Does Chlorzoin Replace Other Preventive Methods?

A point not mentioned by Dr. Lewis, but one that should be answered because it has been made by others, is that Chlorzoin therapy should be considered as an *alternative* to more conventional preventive procedures, i.e. fluorides and advice on the appropriate use of dietary carbohydrates and oral hygiene. I do not agree with that opinion: Chlorzoin use should not be considered any differently, or in isolation, from any other preventive method available to the dentist

and patient. Both Knowell and I are committed to the principle that Chlorzoin therapy must be offered as a supplement to the usual preventive practices. Because of the multifactorial etiology of caries, we consider this to be the most viable approach for preventing the disease.

Summary

The use of Chlorzoin therapy in Canadian dental offices, as a supplement to the currently-accepted methods for the prevention of caries, is based on solid scientific principles. Since it differs from previous methods in being specifically directed at the bacteria that cause dental caries, however, care must be taken, prior to using Chlorzoin therapy, to ensure that all indices of infection in the form of open caries lesions are restored. This will maximize the potential for success.

The safety of the therapy has been closely examined and adverse effects are negligible. Cariescreen, the adjunct to Chlorzoin, is an office procedure for estimating the bacterial risk factor and has its greatest value in determining when the bacterial risk factor is low, caries will not occur, and Chlorzoin treatment is not necessary.

Clinical caries trials to assess the effectiveness of Chlorzoin therapy against caries are currently under way. ■

Dr. H.J. Sandham is a professor and head of microbiology in the faculty of dentistry, University of Toronto.

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Editor's Note:

In the interest of scientific discourse, the Journal is pleased to be afforded the opportunity to publish the opinions of Drs. Lewis and Sandham regarding Chlorzoin. Until further documented research is available the debate between these two eminent scientists, within the pages of this publication, ends with this edition.

However, as with everything else appearing within the Journal, letters from readers expressing their views are always welcome.

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THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anaesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9) (serum creatinine 1.9-5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rate due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcer or upper GI bleeding are as follows:

INTERVAL	CUMULATIVE OCCURRENCE	
	KETOROLAC	ASA
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID, oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetric preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS and PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, dyspepsia or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking a NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevation of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with ketorolac tromethamine. Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L): Toradol is not recommended; **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate (SGPT) or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 7.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or Less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, phoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system** -uria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorders** - edema. **Incidence 1% or Less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth irritation, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, normal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorders** - weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system** - chest pain, chest pain substernal, graine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

Adverse reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous system** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence between 2 and 3%:** **Nervous system** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or Less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, phoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, anorexia, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia; **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSEAGE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half;

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: 2. TORADOL Product Monograph, Syntex Inc., Dec. 1992. 3. Rooks WH II. *Pharmacol Ther* 1990;10(6 Pt 2):305-325. 4. Yee JP et al. *Pharmacol Ther* 1986; 6(5):253-61. 5. Brown CR et al. *Pharmacol Ther* 1990; 10(6 Pt 2):455-505. 6. O'Hara DA et al. *Clin Pharmacol Ther* 1987; 41:556-61. 7. Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987. 8. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. 9. Stanski DR et al. *Pharmacol Ther* 1990; 10(6 Pt 2):405-445. 10. Data on File, Syntex Inc., Document #90027-1, 1989. 11. Stahlgren L. Data on File, Syntex Inc., Document RS-37619, 1991. 12. Data on File, Syntex, Document #90027-2, 1989. 13. Forbes JA et al. *Pharmacol Ther* 1990;10(6 Pt 2):775-935. 14. Forbes JA et al. *Pharmacol Ther* 1990; 10(6 Pt 2):945-1055. 21. Data on File, Syntex Inc., Document #90027-3, May 1990. 22. Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. 23. Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-41. 24. Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. 25. Diebschlag W and Nocker W. Data on File, Syntex Inc., Document CL5468, 1990. 26. Molinje J et al. Data on File, Syntex Inc., Document CL4624, 1988. 27. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. 30. American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 3rd edition, 1992. 36. Hufteeman W et al. Data on File, Syntex Inc., Document CL4882, 1989. 38. Bloomfield S et al. *Pharmacol Ther* 1986;6(5):247-52. 39. Sunshine A et al. Data on File, Syntex Inc., Document CL3674, 1986. 46. Vangen O et al. *J Int Med Res* 1988;16:443-51. 48. Brown J. *Clin Pharmacol Ther* 1993;53:222. 52. Cataldo PA et al. *Surg Gynecol Obstet* 1993;176:435-8. 54. Inklehar H et al. Data on File, Syntex Inc., Document CL3549, 1986. 55. Yee JP et al. Data on File, Syntex Inc., Document CL3849, 1987. 56. Tommerlaasen M et al. *Surg Forum* 1992;43:510-2. 57. Steele R and Durwood EN Jr. *South Med J* 1992;85:35-103. 58. Forrest JB et al. *J Dev Clin Med* 1992;10(3):129-50. 59. Stahlgren L et al. *Clin Ther* 1993;15(3):570-80. 60. Launo C et al. *Minerva Anestesiol* 1991;57:1092-3. 61. Boscik V et al. *J Clin Anesth* 1992;4:480-3. 62. Fricke J et al. *Clin Ther* 1993; 15(3): 500-507.



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Montréal (Qué.)
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The Upjohn Company
of Canada
Don Mills, Ontario



82ND WORLD DENTAL CONGRESS ♦ VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE

The Olympics of Dentistry Tailored Just for You



The 82nd World Dental Congress — How big is it? Will there be too many people? Will it be overwhelming?

In recent months, because of the high registration, many people have approached me, asking these exact questions. It is true that at the time this article was written, three months prior to the convention, FDI '94 had the highest pre-registration figures in FDI history with over 8000 people enrolled.

However, large does not mean impersonal. We are making every effort to extend personalized individual service to you.

The Scientific Program is an example of how we have tailored FDI '94 to meet your needs. With over 200 scientific presentations, this international educational forum has attracted an enormous response. In order to fulfill the overwhelming demand for the Hands-On and Limited Attendance courses, the Organizing Committee and staff have been working diligently to accommodate as many people as possible, yet maintain the individualistic and intimate aspect of these sessions. Since its origination, the Scientific Program has almost tripled in size! Extra Hands-On courses have been added and these will be a unique opportunity to meet and share ideas with other participants.

Socially, FDI '94 is a week designed especially for you! Among a wide range of social events and excursions we have arranged a special post-congress tour on the Rocky Mountain Train. Although the train was not scheduled for October, the organizing committee could not let FDI participants miss the opportunity to see the Rocky Mountains. Therefore we have put together an extraordinary trip designed for all dental professionals and their guests.

Tourism Vancouver and hotel General Managers have collaborated with us in increasing the number of hotel rooms available for FDI '94. The size of our hotel blocks has enlarged and new hotels have been added to our extensive list. If you have not yet done so and wish to reserve a room, send your request to our office and we will be pleased to accommodate your needs.

The FDI '94 staff, including the Organizing Committee is at YOUR disposal. Feel free to call our Ottawa office and ask to speak to a member of our staff; someone will always be on-hand to provide information. Here are some names to keep in mind: if you need hotel information call Brian; if you have questions on the Scientific Program ask Craig; North American registration is handled by Mike, Inga, or Rebecca; international registration is done out of London but managed locally by Linda; questions about the Dental Trade Exhibition can be answered by Francine; communication details and publicity are handled by Laura and for information on the social program ask Heather. However, none of the office personnel can help, speak with Madeleine, the convention manager, or ask for me directly.

Everyone is encouraged to register for the Congress and all of its exciting attributes. If you have already registered, yet wish to add additional courses or social events, the opportunity still exists. Simply obtain an enrollment form and mark the events you wish to have added to your registration. Then mail or fax it to the Ottawa office. Clearly indicate that this is an *addition* to your registration form.

Every dental professional attending the Congress will play an intricate role. Without YOU, the Congress cannot take place. FDI '94 may be large but its individual components are small, allowing participants to meet on a one-to-one basis. FDI '94 is designed for individuals and their needs and this can be seen in all aspects of the Congress!

Join the CDA, the B.C. College of Dental Surgeons and the Organizing Committee in extending a hearty welcome to all international Congress visitors to Canada. We look forward to seeing you in Vancouver!

Michel Jahjah, DDS
General Chairman
FDI 1994 Organizing Committee
c/o Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062

82ND WORLD DENTAL CONGRESS ♦ VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE

A Marketplace of Dental Technology



The 82nd World Dental Congress has been in the planning stages for over five years. As October 2nd - 8th approaches all the dreams and aspirations of the past few years are quickly becoming a reality. The Dental Trade Exhibition has flourished and grown to a dimension unprecedented in Canada. Come to the Vancouver Trade and Convention Centre between October 4th - 7th and witness this momentous event.

In the early planning stages of FDI '94 the Dental Trade Exhibit consisted of only one hall. The Organizing Committee believed that over 400 booths would suffice the demand for exhibit space. However, as the 82nd World Dental Congress grew closer and marketing efforts increased, exhibitors began to respond enthusiastically. It was quickly realized that a second exhibit area was essential in order to meet the overwhelming demand for display space. It was at this point that a second hall, the Cruise Ship Level, was announced and approximately another 150 booths were added. This year's Dental Trade Exhibition has reached extraordinary proportions thus making it the focal point of all activity.

Exhibitors are in the final planning stages of their booths and are gearing up for the largest Dental Trade Event to be held in Canada. Those participating at FDI '94 consist of internationally renowned companies displaying innovative improvements, technological discoveries and practical products. Each individual company will be bringing a wealth of information and technology to this forum.

Interactions with exhibitor personnel is an essential component of the Dental Trade Exhibition. In order to correctly communicate with a dental team and effectively market a product, exhibit booth personnel must be well-equipped to answer any questions. These highly-qualified professionals will be on hand to demonstrate their products, illustrating proper and effectively utilize them.

Dentistry is a continuously evolving field. Dental professionals are perpetually looking ahead to see how procedures can be improved. Have you ever wondered what a dental clinic would look like in the future? The 82nd World Dental Congress will be embarking on a trip to the year 2000! Sponsored by Siemens, "The Dental Clinic of the Future" will be located on the Cruise Ship Level of the Exhibit Hall. Participants of FDI '94 are encouraged to visit this exceptional and educational display.

The Dental Trade Exhibition will also be the location of two very exciting draws. This year we will be giving away a brand new Volvo (compliments of Volvo) to a lucky FDI '94 participant! In addition, Aurum Ceramic has generously donated a Harley Davidson 1200 Sportster. To qualify to win these and many more prizes, participants must deposit their tickets at the designated area in the Dental Trade Exhibition. Everyone is encouraged to attend the draws and see who holds the lucky tickets!

Every dental professional attending the 82nd World Dental Congress is strongly encouraged to visit this marketplace of dental technologies. The Dental Trade Exhibition will be a unique opportunity to meet, one on one, with exhibitors from around the world. It will be a chance to speak directly with manufacturers of the products used everyday in your office!

While at the 82nd World Dental Congress set aside as much time as possible for the Dental Trade Exhibition. We look forward to seeing you in Vancouver!

Ron Markey, DDS
Chairperson, Exhibits
FDI 1994 Organizing Committee
c/o Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Tel.: 1-800-267-6354
Fax: (613) 523-3062

3M Canada Inc.

◆ A ◆

A-Dec, Inc.
A.R. Medicom Inc.
Abel Computers Ltd.
Accu-Dent Research
ACT Laboratories Ltd.
Advance Medical Products
Advanced Dental Concepts
Aesthetic Porcelain Studios, Inc.
Allstar Dental Laboratories Ltd.
Almore International, Inc.
Alphadental Products Company
Amadent/American Medical & Dental Corporation
American Dental Association
American Dental Technologies Inc.
American Xyrofin, Inc.
Ampco Dental Equipment Inc.
Analytic Technology
APM – Sterngold
Appollo Dental Products
Arm & Hammer Dental Care
Aseptico Inc.
Ash Temple Limited
Astra Pharma Inc.
Aurum Ceramic Dental Laboratories

◆ B ◆

Becker-Parkin Dental Supply Co. Inc.
Bego Bremer Goldschlaegerei
Bego Canada
Belmont Equipment Corp. Div. Takara Co.
Beutlich L.P.
Biodent
Bisco Dental Products
Block Drug Company (Canada) Ltd.
The Bonart Co., Ltd.
Brasseler Canada Inc.
Buffalo/Bolton Dental Mfg. Inc.
Burroughs Wellcome Inc.
Byte Dental Systems Inc.

◆ C ◆

Calcitek Inc.
Canadian Dental Association
Canadian Dental Service Plans Inc.
Canedental Supply Ltd.
Canebsco Reception Room Subscription Services
CDAnet
Cendres & Metaux Inc. (Canada)
Central Dental Ltd.
Centrix Incorporated
Cerum Dental Supplies Ltd.
Cerum Ortho Organizers
Champion Dental Products Inc.
Classic Dental Laboratories
Clinical Research Dental Supplies
Colgate-Palmolive Canada, Inc.
Coltene/Whaledent
Columbia Dentoform
Confi-Dental Products
Cosmedent Inc.
Cottrell, Ltd.
Creative Play Environments Mfg.
Crosstex/Cross Country Paper Products
Custom Vacuum

◆ D ◆

Dansereau Health Products Inc.
Danville Engineering
DCI International
Dedeco International, Inc.
Degussa Canada Ltd.
Denerica Dental Corp. / Renfert GmbH
Den-Mat Corporation
Den-Tal-Ez Equipment
Den-Tal-Ez, Inc.
Dent-X
Dental Mac By Healthcare Communications
Dental Plus
Dentalaire Products International
Dentamerica
Dentatus AB
Dentaurum J.P.
Winkelstroeter KG
Dentech International

Dentona GmbH
Dentorium Export Ltd.
Dentsply Canada Ltd.
Designs For Vision, Inc.
Diadent Mfg. Inc.
Diatech Diamant
AG Switzerland
DW Technology

◆ E ◆

E & D Dental Products
ECI Medical Technologies
Efos Inc.
Ellman International, Inc.
Encyclopaedia Britannica
Engle Dental Systems
Equinox Financial Group, Tom Williams
ESPE Dental-Medezin GmbH & Co. KG
Essential Dental Systems, Inc.
Exan/FDI Message Centre
Exan Technologies Inc.*
Excelco International, Inc.

◆ F ◆

Filhol Dental / Filpin Filpost Ltd.
Fine Arts Dental Laboratories Ltd.
Fischer Industries Inc.
Fittydent Altwirth & Schmitt GmbH
Forest Medical Products, Inc.
Friatec AG/Medical Devices Division

◆ G ◆

G. Hartzell & Son
GC America Inc.
Gendex/Midwest/Rinn Corp.
Genie Computer Systems Inc.
George Taub Products / Reliance Dental
General Scientific Corporation
Germany Official Participation
Gilbert's Dental Supplies Inc.
Goof Denmark

◆ H ◆

Hager & Meisinger GmbH
Harry J. Bosworth Company
Health Pro Group
Healthfirst Corporation
Healthgroup Financial Div. Newcourt Cred.
Henry Schein Inc.
Heraeus Kulzer GmbH
Herco Enterprises Inc.
Higa Manufacturing Ltd.
Hoechst-Roussel Canada Inc.
Hu-Friedy Mfg. Co., Inc.
The Hygenic Corporation

◆ I ◆

I Contact Communications
Implant Innovations
Inland Dental Dist. Ltd.
Innova Corp.
Innovadent Technologies Ltd.
Insight Imaging Systems, Inc.
Institut Straumann AG
Ivoclar North America, Inc.

◆ J ◆

J. Morita Corporation
J.F. Jelenko & Co.
J.M. Ney Company International, The
Jeneric/Pentron
John O. Butler Company
Jordan AS
J.S. Dental Mfg. Inc.

◆ K ◆

Kaltenbach & Voigt GmbH & Co. – Kavo –
Karl Hammacher GmbH
Kavo Elektrotechnisches Werk Leutkirch
Keeler Instruments Inc.
Kerr, A Subsidiary of Sybron Corporation
Kilgore International, Inc.
Knight Manufacturing Inc.
Knowell Therapeutic Technologies Inc.
Kodak Canada Inc.
KPMG Peat Marwick Thorne

* Our apologies to Exan Technologies Inc. for having been omitted from our previous exhibitor's list.

Preliminary Exhibitor's List

FDI
1994

◆ L ◆

L & R Manufacturing
Company
Lactona/Universal Dental
Corporation
Lares Research
Lasod Spa
Lasdent Technologies
Inc.
Lifecore Biomedical/
Oral Restorative
Life-Like
Litema/Kentzler

◆ M ◆

M&CC Cabinet Systems,
Ltd.
Mada International Ltd.
Marus Dental International
Masel
Matrx Medical Inc.
Matsutani Seisakusho Co.,
Ltd.
Maxill Inc.
McNeil Consumer Products
Company
MDT Corporation
M.D.T. Industrial Dental
Tools Inc.
Medical Polymers
Medi-Dent Services Inc.
Medisporex - PVT - Ltd.
Megadenta Ltd.
Merck Frosst Canada
Vaccine Division
Metalor
Metasys Dental
Products Inc.
Files Inc. Dental
Products
Miltex Instrument
Company, Inc.
Mirage Dental Systems
Mo-Dent Ltd.
Mobile Dental Equipment Corp.
(M-DEC)
Moore Pemaco
Mossby Times Mirror
Professional Publishing
Moyco Union Broach
Mydea Marketing Inc.
Myo-Tronics, Inc.

◆ N ◆

Nakanishi Dental Mfg
Co. Ltd.
Napa Dental Products
National Biological Labs, Inc.
Nephron Corporation
New Image Industries
New Technology Instruments
Nite White
Nobelpharma
Northstar Dental, Inc.

◆ O ◆

Omni Tech Inc./Germiphene
OMS - Otho-mix Supplies
Inc.
Op-D-Op Visor Shields
Oral Logic Inc.
Oral-B Laboratories
Ortho Arch Co. Inc.
Oxyfresh (Canada)
Oxyfresh (U.S.A.)

◆ P ◆

Panasil Impression
Materials
Panoramic Corporation
Pascal Company Inc.
Patterson Dental/
Dentaire Canada Inc.
Periodontal Health
Brush Inc.
Pharmascience Inc.
Phase Change
Planmeca Oy
Polaroid Canada Inc.
Precise Dental
Premier International
Premier/Espe - Premier
Canada Inc.
Prestige Medical
Pride Institute
Pro Dentec Canada
Procter and Gamble
Professional Practice
Builders, Inc.
Professional Practice
Sales Ltd.
Promident Manufacturing
Limited
Pulpdent Corporation

◆ Q ◆

Quality Aspirators
Quattrotti SRL
Quintessence Publishing
Company Inc.

◆ R ◆

Regam Medical Systems
(Div. Bytech Ltd.)
Ribbond, Inc.
Richmond Dental Company
Ritter Dental Equipment Inc.
Ritter GmbH
Dentaleinrichtungen
Rocky Mountain
Orthodontics
Roeko Roescheisen GmbH
& Co.
Royal Bank of Canada
Royal Dental Manufacturing
Inc.

◆ S ◆

Safeskin Corporation
Schick Technologies Inc.
Schooner Academics
Sci-Can A Div. of Lux &
Zwingenberger
Septodont, Inc.
Shaw Laboratories Ltd.
Shinhung Co., Ltd.
Shofu Dental Corporation
Siemens Aktiengesellschaft
Medical Eng.
Sinclair Dental Co. Ltd.
Smilemakers Inc.
SmithKline Beecham
Pharma Inc.
Sofraced
Soredex Medical Systems
Southern Dental Industries
Space Maintainers
Laboratories Canada
SS White Burs Inc.
Star Dental
Stelte Company Inc.
Steri-Oss
Sultan Group
Sunrise Technologies, Inc.
Svenska Dental
Instrument AB
Syntex Laboratories, Inc.

◆ T ◆

Teledyne Water Pik
Canada
Temrex Corporation
Texceed Corporation /
Obtura
Tri Hawk Corporation
Troll Plastics Inc.
Trophy Radiology
Tuttnauer Co. Ltd.

◆ U ◆

U.N.I.D.I. National Union of
Italian Dental Industries
Ultracam
Ultradent Products Inc.
Unident Limited
Unilever Research
USD

◆ V ◆

Van R/Clive Craig/Cadco
Viade Products Inc.
Vita Zahnfabrik - H. Rauter
GmbH & Co. KG
Vivadent

◆ W ◆

W & H Dentalwerk
Burmoos GmbH
Warner-Lambert
Canada Inc.
Werther International SRL
Westan Dental Products
Group Ltd.
Williams (A Division of
Ivoclar N. Amer.)
Wright Dental Canada
Limited
Wrigley Canada Inc.

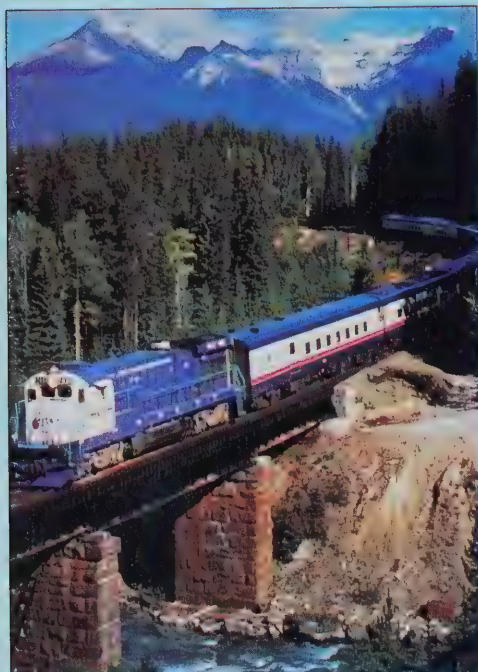
◆ Y ◆

Young Dental
Manufacturing Company

◆ Z ◆

Zest Anchors Inc.
Zhermack Spa
Zila Pharmaceuticals Inc.
Zirc Dental

Extend your vacation!



Canadian Rocky Mountains

See the wonders of the Canadian Rockies on this post-Congress train excursion! Travel high into this awe-inspiring scenery of mountains, glaciers and snow-capped peaks! See Canada as you have never seen it before!

- Travel from British Columbia to Alberta through the Rocky Mountains!
- Observe the diverse wildlife and natural attractions found only in this mountain range!
- Visit the infamous cities of Jasper, Banff and Lake Louise!
- Gaze upon mountains that disappear into the clouds!
- See Calgary — the home of the 1988 Winter Olympics!
- Travel to the region where glacier lakes lie in the midst of towering peaks!

The Canadian Rocky Mountains tour is a trip not to be missed.



Alaska

Sail into your week at FDI '94 with a memorable pre-Congress cruise to Alaska!

- Visit Glacier Bay!
- See authentic totem poles in their natural settings!
- Toast your friends at the Red Dog Saloon — a taste of the gold rush days!

This trip of a lifetime will take you to the northern-most coast of the United States.



Los Angeles

Board the Holland America's M.S. Westerdam on October 10th for a post-Congress tour to Los Angeles.

- Spend two extra days in Vancouver before setting sail for a new destination!
- See the western seaboard of Canada and the United States!
- Visit the city of celebrities and beaches!

Take a little trip to this infamous and exciting city!



Australia and New Zealand

Travel "down-under" with the post-Congress tour that takes you to the homes of the koala bear and kiwi fruit!

- Take part in a wine tour!
- Visit Cairns, a city surrounded by the Great Barrier Reef and tropical rain forest!
- Spend two nights on a sheep, kiwi fruit or cattle farm!

Take advantage of this opportunity to meet fellow dentists while attending regional dental meetings.



Hawaii

Bask in the warm Hawaiian sun in this post-Congress tour to the Pacific!

- Stroll along beautiful beaches!
- Photograph breathtaking scenery!
- Swim, sail, or surf in the Pacific Ocean!

Spend your week relaxing on the magnificent tropical island of Oahu!

For more detailed information, contact the FDI 1994 Organizing Committee at 1-800-267-6354 by telephone or at (613) 523-3062 by fax.

Poster Presentations



Alphabetical listing of Poster Presentations to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

ABOUSH, Yousef (UK)

Fluoride Release from Tooth-Coloured Restorative Materials
Torabzadeh, H.

AKASHI, Toshikazu (JAPAN)

A Cutting Efficiency of Root Canal Wall with Mechanical Equipments
Akashi, Toshikazu; Mikami, Tomomasa; Saito, Tsuyoshi; Suzuki, Ryou

BASSETT, Shirley (CANADA)

Dental Caries and Streptococcus Mutans Levels in Pre-School Children — A Community Research Pilot Project
Bassett, William H.; Hargreaves, J.A.; Williamson, M.F.

BENEDEK, Erika (HUNGARY)

A Pilot Study to Evaluate the Sensitivity of a Six Site Plaque Index vs. a Two Site Plaque Index for the Assessment of Dentrifice Efficacy
Fairbrother, K.; Gera, Istvan; Kövesi; György; Stevenson, Vicky

BHOLE, Sameer (SINGAPORE)

Computer Education — A Curricular Need for Entry to Dental Practice
Choo Soo, Teo; Keson, Tan

CLOKIE, Cameron (CANADA)

Enhanced Osseointegration Around Titanium Implant Following TFG-B1 Administration
Delorme, D.; Dhanoa, S.; McCarthy, G.F.; Rahal, M.D.

CONCIEÇÃO, Ewerton (BRAZIL)

Hybridizing Dentin Associated with Modern Glass Ionomer Cements
Borba De Araújo, Fernando; Rosito De Araújo, Daniela; Manfredi, Diego

CORBET, Esmonde (HONG KONG)

Periodontal Consequences of the Chinese (Mongoloid) Dentition

CRAMER, Carl K. (CANADA)

Methodology and Criteria for a Decision Analysis: The Management of Teeth to Minimize Osteoradionecrosis in Therapeutically Irradiated Head and Neck Cancer Patients
Schechter, Martin

DASTEVSKI, Branilav (MACEDONIA)

Identification of Nomen Nescio Using Dental Characteristics

DELLERMAN, Paige (USA)

In Evaluation of Bristle End-Rounding in Two New Profiled Toothbrushes
Kreyling

DELLERMAN, Paige (USA)

In Evaluation of Bristle End-Rounding in Five Toothbrushes
Kreyling; Wachtel; Walsh

DELLERMAN, Paige (USA)

New Method for In Vitro Evaluation of the Interproximal Penetration of Manual Toothbrushes
Burkett; Volpenhein; Walsh

IMITROVSKI, Vangel (MAKEDONIA)

Lymphocytes Reactivity Alterations and Subsets of T-Lymphocyte Alterations in Juvenile and Adult Periodontitis

IOKOS, Eleftherios (GREECE)

Effectiveness of a Preventive Program on a Caries and Gingivitis of School Children in Elefsina
Artemi, A.; Logothetis, Chr.; Trimi, K.

IOKOS, Eleftherios (GREECE)

Hepatitis C Virus Infection in Dentists
Batis, M.; Dokou, H.; Kontos, D.; Logothetis, Chr.

IONG, Yuan-Jang (TAIWAN)

Histofluorescent Study of Sympathetic Innervation of Human Oral Gingiva
Peng, Tzi-Kang; Wang, Hsing-Won

ELDERTON, Richard (UK)

Preventive and Restorative Management of Caries

EXNER, Vic (SOUTH AFRICA)

Masking Fluorosis and Other Stains with Resins Applied to Inner Surface of Ceramic Veneers

FALLER, Robert (USA)

In-vitro Fluoride Uptake from Dentrifices Containing Sodium Fluoride and Potassium Nitrate
Agricola, F.O.; Euersole; Shaffer

FALLER, Robert (USA)

Anti-Caries Efficacy of a New Fluoride Toothpaste Containing Pyrophosphate and Baking Soda
Best; DePrato; Huetter; MacKay

FALLER, Robert (USA)

In-vitro Assessment of Single Activity and Mixed Activity Fluoride Dentrifices
Agricola, F.O.

FALLER, Robert (USA)

Animal Caries Efficacy of Dentrifices Containing Sodium Fluoride and Potassium Nitrate
Best; DePrato; MacKay; Shaffer

GELBIER, Stanley (UK)

Accessibility to Dental Treatment and Attendance Patterns of Japanese Members of the Nippon Club of London
Shinsho, Fumiaki

GHAFFARI, Mohammad (IRAN)

Dentistry in Ancient IRAN (Persia)

GIBSON, Gary (CANADA)

Infection Control Procedures in Private Dental Practices in New Zealand and British Columbia

HARGREAVES, John A. (CANADA)

Profiles of Pre-School Children in Urgent Need of Dental Care in British Columbia: A Pilot Survey
Williamson, Malcolm F.

HARRISON, Rosamund (CANADA)

A Culturally-Specific Oral Health Program for High-Risk Vietnamese Children
Contreras, Beverly; Ewan, Cindy; Phung, Yvonne; Wong, Tracy

HASELHUHN, Klaus (DEUTSCHLAND)

Difference Between FEM-Study (AUSYS) and Measurement with the Strain - Gauges - Technique
Hannemvilles, M.A.; Huber, H.P.; Kobes, L.; Kraus, V.

HIDEO, Ichiki (JAPAN)

The Influence of Dental Picture Books at Waiting Room of Dental Office

IGARASHI, Takayoshi (JAPAN)

Inlay and Onlay Cavity Preparation Design for Castable Ceramics
Kakehashi, Yoshiyuk

IJIMA, Morio (JAPAN)

A Case Report of Aesthetic Protheses Using a Dimple-Bar Telescope System
Matsumoto, Toshihiko

ISHII, Tomohiro (JAPAN)

A Case Report of a Patient with a Prognosis Four Years after Surgical Orthodontics for Mandibular Prognathism
Ikeda, Sunao

ITO, Masayasu (JAPAN)

Acoustic Stapedius Reflex on TMD
Ikeda, S.; Kobayashi, H.; Matsumoto, T.; Shimizu, K.

Alphabetical listing of Poster Presentations to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

JANEV, Jordon (MACEDONIA)

Bioceramic Endosseous Implants

Bogdanovski, I.; Bojadziev, T.; Janev, R.; Sabanov, T.; Veleviski, D.

KANABAYASHI, Takuya (JAPAN)

SEM Observation of Collagen Fiber Architecture of Tooth Extraction Wounds

Gonda, Y.; Higuchi, Y.; Hirose, H.; Okazaki, J.

KASHIWAGI, Kousuke (JAPAN)

Visualization and Quantitative Analysis of Muscle Contraction

Pattern During Mastication

Kawazoe, Takayoshi; Kusumoto, Tetsuji; Nabeshima, Tatsumasa;

Tanaka, Masahiro

KATAYAMA, Tadashi (JAPAN)

Tooth Crown Color: Comparison Between Japanese and Mexican

Goel, Martha; Katayama, Ikuemon; Kijima, Sigeakazu

KITAMI, Noriko (JAPAN)

Electron-Microscopic Study of Abutment Surface Following Mechanical Cleaning

Kitami, N.; Hoshino, M.; Nakaya, H.; Sato, S.

KOBAYASHI, Hisazumi (JAPAN)

Fluctuation of Eustachian Tube Function with Mandibular Movement

Ikedai, S.; Ito, M.; Matsumoto, T.

KOMASA, Yutaka (JAPAN)

A Clinical Report of Complete Dentures Using Two-Piece Type Artificial Teeth

Gonda, Yoshimichi; Nezumi, Mashiho

KOMORI, Norio (JAPAN)

A Study on the Non-destructive Identification Methods for Metal Restoration —

The Influence of Sampling Points and Analysis of Conditions

Ogawa, Mitsuru; Saito, Tsuyoshi; Yahagi, Minoru

KONTOS, Dimitrios (GREECE)

The Results of a Whole Program of Dental Care and Prevention

Dokos, E.; Gourlas, P.; Karapanos, H.; Nikolopoulou, F.

KONTOS, Dimitrios (GREECE)

Self Administration of Antibiotics by Patients in a Dental Clinic

Dokos, E.; Gourlas, P.

LAMBERG, Matti (Finland)

Frequency of Various Symptoms According to Factual and

Supposed Water Fluoridation Status

Hannu, Hausen; Terttu, Vartiainen

LANZALACO, Anthony (USA)

Inhibition of Plaque Acid Production Following Extended Use

of a Stannous Fluoride Dentrifice

Bollmer; Grossman; MacKay

LANZALACO, Anthony (USA)

Effects of an In-Office Scaling Gel on Professional Effort

Required for Calculus Debridement

Arends; Dijkman; White

LANZALACO, Anthony (USA)

Desensitizing Efficacy of a 5% KNO₃/0.243% N₂F Dentrifice

Berman; Campbell; Fratarcangelo; Hanna; MacKay; Perlich;

Salvato; Shafer; Silverman

LANZALACO, Anthony (USA)

Antigingivitis Effect of a Stannous Fluoride Dentrifice

Bacca; Beiswanger; Bollmer; Eichhold; Jackson; Mau; Perlich

MALVITZ, Dolores M. (USA)

Screening for Dental Fluorosis: A Two-Step, Model Plan

Batten, Jerry L.; Iafolla, Timothy; King, Rebecca; Malvitz, Dolores M.

Rozier, Gary R.; Spratt, Jean S.

MORRISON, Terence (UK)

Patients' Beliefs on the Causes of Oral Cancer and the Values of

Oral Health Screening

Humphris, Gerry M.

NAGAI, Elichi (JAPAN)

Abrasive Wear of Denture Teeth and Wear of Opposing Metal Plates

Kitamura, K.; Nishiyama, M.; Ohki, K.; Ohwa, M.; Sakamura, M.

Satoh, Y.; Toyoma, H.; Uchida, K.

NOMURA, Atsushi (JAPAN)

Clinical Analysis of Out Patients Complaining About the Poor Prognosis of Implants

Nomura, A.; Sato, S.; Takamori, H.; Yosue, T.

NATHOO, Salim (USA)

Professional Tooth Whitening Systems

NUSSBAUM, Robert (ROMANIA)

Hereditary Dentinogenesis Imperfecta — Genetical and Clinical Study

OLIVEIRA, Suelo (BRAZIL)

Teaching Behavioral Sciences

OMURA, Yasuhiro (JAPAN)

Surface Characteristics of Composite Resins Assessed

by Three Polishing Systems

Katayama, Ikuemon; Katayama, Tadashi

ONO, Yoshiaki (JAPAN)

Cloning and Nucleotide Sequence of the Gene Coding

for Dextranase of Streptococcus Salivarius

Gonda, Yoshimichi; Kubo, Shigemasa; Matsuya, Tokuzo;

Ohnishi, Yuichi; Okano, Hakuro

OWA, Masaaki (JAPAN)

Evaluation of Elastomeric Reproducibility of Elastomeric Impression Materials

Aida, H.; Nagai, E.; Nishiyama, M.; Ohki, K.; Ohya, T.; Satoh, Y.

Toyoma, H.; Tsurumaki, K.; Uchida, K.

PANAGIOTOUNI, Efthymia (GREECE)

Surface Details Reproducibility of Phosphate-Bonded Investment

Diakoyanni, I.; Kaloyannides, A.

PAYETTE, Martin (CANADA)

Edentulousness among adults 18 and over in Quebec, Canada

Brodeur, Jean-Marc; Picard, Daniel; Olivier, Marie; Williamson, Sylvie



Poster Presentations

FDI
1994

Alphabetical listing of Poster Presentations to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

RUSSAK, Silvia (ESTONIA)

The Dental Disease in Young People in Estonia
Nõmmela, R.; Russak, S.; Saag, M.; Vasar, R.

SATOH, Yoshinori (JAPAN)

Relaxation Effect of an Audiovisual System on Dental Patients
Kitamura, K.; Nagai, E.; Nishiyama, M.; Ohki, K.; Owa, M.
Sakamura, M.; Toyoma, H.; Tsurumaki, K.

SEKIMOTO, Tsuneo (JAPAN)

Effect of Cutting Instrument on Dentine Permeability
Derkson, G.; Richardson, A.

SHIONO, Makoto (JAPAN)

A Study of Disinfection of Air Turbine Handpieces — The Effect of Intentional Aspiration with Alcoholic Disinfectant into Air Turbine System
Koumaru, Minoru; Ogiso, Bunai; Saito, Tsuyoshi; Shin, Zaimei

SHIRAKAWA, Masaharu (JAPAN)

Ultrastructures of Regenerated Periodontal Ligament
Following Implantation of Sintered Bone-Collagen Compound
Hiroshi, Okamoto

SILVA, Elenita (BRAZIL)

Public Health Dentistry in an Amazon Community

SOMBORAC, Milan (CANADA)

The TENAX Dental Implant System

STANISAVLJEVIC, Goran (YUGOSLAVIA)

Comparative Analysis of Dental Health and Salivary Colonization Level of Mutant Streptococci in Healthy Children and Children with Chronic Tonsillitis
Branislavica, Koci; Dragan, Krasi; Marko, Vulovi;
Mirjana, Apostolovi; Mirjana, Jankovi

STEWART, Arthur Van (USA)

Using the DSM-IV-R (CD-9) System for Identifying and Interpreting Possible Behavioral Problems Among Geriatric Patients
Fischer, Jacqueline; Friedman, Paula K.

SUDA, Motoko (JAPAN)

Effective Application of Fluoride Gel with Modified Trays
Hagiwara, Y.; Shimada, Y.; Uchida, M.; Umez, Y.

TAKAHASHI, Kazuya (JAPAN)

Three-Dimensional Analysis of Facial Morphology Wearing Complete Denture
Gonda, Yoshimichi

TAKAMORI, Hitoshi (JAPAN)

Analysis of Early Loss Cases of Branemark Implants
Nomura, A.; Sato, S.; Takamori, H.; Yosue, T.

TAKEDA, Tomotaka (JAPAN)

The Dental Magnetic Attachment Applied Esthetic Prosthodontics (Part II)
Ishigami, K.; Ishigami, T.; Takayama, K.; Tanaka, N.; Ohki, K.

TASAR, Ferda (TURKEY)

HCV Incidence Among the Turkish dentists
Akkocaoglu; Bulut; Giray; Meral; Ozkuyumcu; Sencift; Tumer

TATSUTA, Mitsuhiro (JAPAN)

Evaluation of Tooth Mobility and Implant Mobility by Using T-M Tester
Kawazoe, Takayoshi; Nakanishi, Takeki; Sarantani, Keiji

TEO, Choo-Soo (SINGAPORE)

Influence of Mentor on Attitudes to Injury Prevention
Stokes, Alastair

THOMPSON, Vicki (CANADA)

Dental Health Services for People with Mental Handicaps
Borowko, Maxine

TORRES-VILLASENOR, Maria Eugenia (MEXICO)

Caracteristicas Bucal de la Lepra

TOYOMA, Hitoshi (JAPAN)

A Clinical Study on the Functional Evaluation of the Removable Partial Denture by Analysis of Masticatory Movement
Aida, H.; Nagai, E.; Nishiyama, M.; Ohki, K.; Ohyama, T.; Owa, M.; Satoh, Y.

TREUSCH, Rudolf (GERMANY)

Selenium and Other Essential Trace Minerals in Modern Medicine and Dentistry

WANG, Shiao-Long (TAIWAN)

Synergistic Effect of Estrogen and Dental Plaque on the Gingiva in Rats
Fu, Earl; Nieh, Shin

WEBER, David (USA)

Continuous Culture Studies on Bacterial Resistance to Stannous Fluoride
Lueders

WEBER, David (USA)

Short Term Effect of Stannous Fluoride Dentifrice on Microbial Plaque Progression
Bollmer; Court; Helsing; Sewak

WHITE, Donald (USA)

Plaque Effects Associated with Continuous Use of S_mF₂ Dentifrice
Baker; Kasturi; Lanza; Macksood

WHITE, Donald (USA)

Factors Affecting the Anti-Microbial Efficacy of S_mF₂ Dentifrice
Kasturi; Lanza; Liang

WHITE, Donald (USA)

Effects of S_mF₂ Dentifrice on Plaque Glycolysis/Regrowth
Cox; Kasturi; Liang

WHITE, Donald (USA)

Effects of Commercial Dentifrices on Plaque Mineralization
Cox

YOSUE, Takashi (JAPAN)

The Usefulness of CT in Branemark Implant Diagnosis
Nomura, A.; Sato, S.; Takamori, H.; Yosue, T.



Table Clinics

Alphabetical listing of Table Clinics to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

ALLEN, W.R. (UK)

Vocational Training for General Dental Practice in the United Kingdom

ALLEN, Robert J. (USA)

Smile Alaska Style

Craft, Charles F.

BAHR, A. John (USA)

Accu-Dent Impression System

BAIN, Crawford (CANADA)

Factors Predisposing to Implant Failure

BALOGH, Peter A. (CANADA)

Implantology — Case Selection and Treatment Planning

BEBERMEYER, Richard (USA)

Oral Health Care Management of Patients with HIV/AIDS

BONTA, C. Yolanda (USA)

Dental Considerations for the Xerostomia Patient

BRENNAN, Janice (CANADA)

A Finishing Technique for Cast Gold Restorations

CAMERON, J. (CANADA)

The Gold Inlay (Video Presentation)

K.E. Murchie Restorative Study Club

CLIFFORD, Susann (USA)

A Continuous Care System for Hypersensitivity

CONRADI, Andreas (CANADA)

Dental Aid

Schappy, Lucy

DE LA FLUENTE LLANOS, Jose Marie (España)

Implante BSS (Biological Screw System) Situaciones Conflictivas-Implantologicas

DE VIZIO, William (USA)

Control of Dental Plaque and Associated Oral Disease with an Antibacterial Chemical Regimen

EMLING, Robert (USA)

Laboratory Antimicrobial Assays on an Alcohol-free Mouthrinse

Yankell, Samuel

FERNANDES, Americo (CANADA)

Evaluation of Anatomically Tapered Custom Cast Implants After One-and-a-Half Years

FOX, Christopher (USA)

Chair-side Periodontal Diagnostic Tests

HAMILTON, James (CANADA)

Indirect Composite Restorations or Indirect Composites from Implants to Onlays

HUGHES, David E. (CANADA)

New Concepts in Bone Regeneration

Trotman, James

KERGER, Mary (USA)

Magnetostrictive Ultrasonic Instrumentation in Periodontal Therapy — "The Holbrook Technique"

Mykiety-Sherstobitoff, Danné; Wyatt, Johanna J.

KOTA, Kohichi (JAPAN)

A Newly Designed Turbine Handpiece System for Cross-Infection Control

Horiuchi, H.; Hoshino, E.; Iwaku, M.; Kawata, S.; Kiryu, T.

Nakanishi, E.; Tamazawa, K.; Yamaga, M.

LEE, Albert (HONG KONG)

New Approaches to Cavity Design of Deciduous Molars for Glass Ionomer Cements

LYON, James (USA)

Interceptive Orthodontics in Mixed Dentition

McCANN, Peggy (CANADA)

Ergonomics: A Back Injury and Repetitive Strain Prevention Program

MEREDITH, Neil (UK)

Communicating Dentistry Using Multimedia for Distance Learning

NASEDKIN, John N. (CANADA)

Tooth-coloured Inlays and Onlays: Material Selection and Cementation

ODLUM, Olva (CANADA)

A Canadian University's Program to Improve Manpower Distribution in Rural and Remote Areas

PORTH, Ron (CANADA)

Microabrasion Past - Present - Future

ROBERTSON, Dave (CANADA)

Customer Service and Total Quality Management in Dental Practice

SAWLER, Katrina (CANADA)

Fourth Generation Dentin Bonding Agents — What Are They & Why Are They Better?

SOMBORAC, Milan (CANADA)

The TENAX Dental Implant System

SMULDERS, Bert (CANADA)

Preparation for a Cast Post and Core — Dr. Tucher Technique

THORBURN, David (CANADA)

Gold Foil, Still The Best Restoration for the Gingival Third
Baynes, Richard Gordon

WAGNER, John (USA)

Instant Custom Trays Made Directly in the Mouth

WISEMAN, Michael (CANADA)

Sotos Syndrome: A Case Study

YANKELL, Samuel (USA)

Clinical Safety and Efficacy of Three Toothbrushes
Emling, Robert

ZOKOL, Deborah (CANADA)

Vancouver Ferrier Gold Foil Study Club — "Esthetic Gold Foil Restorations"

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the additional selections. Be sure to clearly mark that it is an addition to your registration then send it back to us. We look forward to seeing you in Vancouver.

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Free Communications



Alphabetical listing of Free Communications to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

AL-SHAAIR, Alaa (IRAQ)

*Comparative Evaluation of Casting Marginal Integrity:
Die-Pattern vs. Conventional Technique*

BASTING, Gerd (DEUTSCHLAND)

*Säulen des Erfolges
Böjsmann, Klaus*

BEATON, Ronald (CANADA)

Tooth Desensitization Before Crown Cementation

BILALI, Abdulla (ALBANIA)

*Correlation of Ectopic Teeth with Cysts and the Values of Surgical Medication
Bilali, Ardian; Guri, Pauli*

BOURRY, Michel (FRANCE)

*Rapport de L'Implantologie Immediate En Odontologie Chirurgicale
Lemormand, François*

BRUGNOLETTI, Orlando (ITALY)

*Endogenous Transmission of Elicobacter Pylori
Del Piano, M.; Nicosia, R.; Pustorino, R.; Santino, I.; Sessa, R.*

CASSARO, Angelo (ITALY)

*Measurements of Masticatory Loads in Fixed Dental Bridges
by Strain-Gages and Photoelasticity
Pitini, A.; Vultaggio, A.*

CHUNG, Kwok-Hung (TAIWAN)

*Effects of Finishing and Polishing Procedures on the
Surfaces Texture of Composite Resins*

COLLAERT, Bruno (BELGIUM)

*The Effect of Smoking on Early Implant Failure
De Bruyn, Hugo*

COMFORT, Margaret (HONG KONG)

*Assessment of the Use of CT Scans in Implant Surgery
Clark, R.K.F.*

CONCEIÇÃO, Ewerton (BRAZIL)

*Preservation and Composite Resin Restoration of Crown-Root Frature Molar
Vidor, Márcia Machado*

CONCEIÇÃO, Ewerton (BRAZIL)

*Evaluation of Marginal Microleakage in Different
Class II Composite Resin Insertion Techniques
Manfredi, Diego; Pires, Luis Gaieski; Vidor, Márcia Machado*

CONSTANTINESCU, Doina (ROMANIA)

*Occlusal Disorders in Children and Youth
Constantinescu, Marian-Vladimir*

CROSSETT, Linda S. (USA)

*Framing a Strategic Plan for the Prevention and Control of
Oral Cancer in the U.S.
Marianos, Donald W.*

DAVID, H. Tony (CANADA)

*A New Treatment for Geminated Teeth
Pirani, Arshad*

DE LA FUENTE LLANOS, Jose Maria (ESPAÑA)

*Nuevo Implante Intraoseo BSS (Biological Screw System)
Técnica Quirúrgica-Protésica
De La Fuente Llanos, Jose Ma*

DE BRUYN, Hugo (BELGIUM)

*4-year Survival of Screw Vent vs Brånemark Implants in Perioperative
Bruno, Collert; Ulf, Linden*

FATORI, Branislav (GERMANY)

*A Four Year Comparative Study on the Use of
Various Implants in Edentulous Patients
Djukanovic, Dragosl*

FATORI, Branislav (GERMANY)

*Perioimplantological Aspects - The Single Tooth Replacement
Djukanovic, Dragosl*

FERGUSON, Norman (CANADA)

Maxillary Frenum and Diastema

FRIEDMAN, Moshe (ISRAEL)

Pediatric Dentistry

GAUZERAN, Didier (FRANCE)

Oral Manifestations of HIV Infections and AIDS Preventive Action

GHASSEMI, Bahram (USA)

*Role of Biono for In-Treatment of cll# Malocclusion
Karkia, M.*

GRASSI, Roberto (ITALY)

*Mucogingival Surgery Around Implants — A Proposal of Guidelines for Treatment
Barone, R.; Clauser, C.*

GURGAN, Sevil (TURKEY)

*In Vitro Cytotoxicity of Tooth Whitners on Gingival Fibroblasts
Akga; Yilmaz*

HASEGAWA, Jiro (JAPAN)

*Mercury Concentrations in Organs of Offsprings of 2nd and 3rd Generations
Hayashizaki, Junko; Takahashi, Yoshifumi*

HUGHES, David E. (CANADA)

*New Concepts in Bone Regeneration
Trotman, James*

HÜTTEMANN, Rolf (GERMANY)

*Zum Behandlungserfolg Nach Anwendung der Gesteuerten -
Gewebe - Regeneration (GTR)*



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IEREMIA, Lucian (ROMANIA)

Notre expérience en ce qui concerne la prothésation complète mandibulaire avec base d'aluminium auto modélée fonctionnellement marginalement par de la résine acrylique thermopolymérisable
Zolton, Cseh

ITO, Yutaka (JAPAN)

A Teeth Palpation Study
Abe, Toshiyuki; Ito, Yutaka; Nakamura, Kentaro; Sakuma, Shigemitsu

IVKOVIĆ, Nebojsa (DEUTSCHLAND)

Enossale Implantate in Der Protmetischen Versorgung
Ivkovic, Sava

JANIK, B. Carol (CANADA)

Electronic Dental Anesthesia in Pediatric Restorative Dentistry

JAVID, Nikzad (USA)

Implant's Problems and Solutions

JOHNSTON, Margaret (USA)

Dental Waterline Contaminants: An Update
Williams, Jeffery

JOSHI, Rajendra (UK)

Learning Styles of Dentists
Pendulbury, M.E.; Rothwell, P.S.

KANEKO, Hiroshi (JAPAN)

The Effect of Dental Equipment on Behaviour, Stress and Pain

KAUKINEN, Jamie (CANADA)

The Influence of Occlusal Design on Force Transmission to Implant-Related Prostheses and Supporting Bone

KUBOTA, Kinziro (JAPAN)

Regional Cerebral Blood Flow (rCBF) Change During Chewing Gum Measures With Positron Emission Tomography (PET) and 0-15 Water
Hunakoshi, Masaya; Momose, Toshimitsu; Sasaki, Yasuhito; Satoh, Yoshinori; Senda, Michio

LAVIE, Gabriel (ISRAEL)

Glanzmann's Thrombasthenia — Conservative and Surgical Dental Treatment Involving Autologous Fibrin Glue — A Case Report
Martinowitz, U.; Rakocz, M.

LEE, Paul (AUSTRALIA)

Non-Extraction Therapy of Crowding in Early Mixed Dentition Stage

LEVENSON, Myron F. (USA)

A More Comfortable and Effective Oral Evacuation Device

LURIE, Russel (SOUTH AFRICA)

Avascular Necrosis of the Mandibular Condyle

MACNEIL, R. Lamont (USA)

Use of Growth Factors in Periodontal Regeneration
Charette, M.; Rutherford, R.B.

MARSHALL, Keith (UK)

Standards in UK General Dental Practice

MELANSON, Sharon (CANADA)

Smokeless Tobacco Popular with Teenagers: Results of a Study from the Central Interior of B.C.
Hargreaves, J.; Lu, James

MEYER, Victor (GERMANY)

Prefabricated Titanium Bar-Superstructures — Clinical Experiences
Reppel, Peter-Dirk

MOSBY, Edward L. (USA)

Efficacy of TMJ Arthroscopy

MURGANI, Zoran (GERMANY)

Are Blade Implants Already Out of Date?
Milica, Murgani

ONG, Ah Hup Michael (MALAYSIA)

Aspiration and Ingestion of Teeth Following Maxillofacial Trauma

ONG, Siew-Tin (MALAYSIA)

Profile and Treatment Modalities of Odontogenic Keratocysts in a Malaysian Population
Siar, Chong-Huat

PANAGIOTOUNI, Efthymia (GREECE)

Retentive Ability of Various Denture Adhesive Materials. An In-Vitro Study
Kaloyannides, A.; Kapari, D.; Pissiotis, A.

PEARLMAN, Braham (AUSTRALIA)

Long-Term Periodontal Care: A Comparative Retrospective Survey

PHILIP, Suzanne (CANADA)

Post and Core Impression Technique Using a Vent
Tucker, Richard; Vancouver & District Crown & Bridge Study Club Members

PICARD, Daniel (CANADA)

Why Dental Caries Prevalence Will Significantly Decline in Quebec (Canada), Over the Next Decade

RAHN, Rainer (GERMANY)

Double-Blind Placebo-Controlled Comparison of I.V. Toxicity of Lidocaine vs Articaine in Man
Ghahremani, M.; Hellenbrecht, D.; Kucher, A.; Offenloch, K.

REPPEL, Peter-Dirk (GERMANY)

A 2-year Follow-up Study of Titanium and High-Gold Fixed Partial Dentures
Böning; Köhler; Walter

RIMONDINI, Lia (ITALIA)

Ultrastructure of Cementum in Periodontal Disease
Baroni; Carrassi

RIMONDINI, Lia (ITALIA)

Ultrastructure of Deciduous Ankylosis
Baroni; Carrassi

RISTIC, Dusan (DEUTSCHLAND)

Re-entry-befunde, Nach, Alloplastischen, Augmentationen

ROESSLER, Ralf (GERMANY)

MRT in the Diagnose der Unterkiefer-Osteomyelitis Nach Strahlentherapie.
Bachmann, G.; Hüttemann, R.W.

RUSPA, Aldo (ITALY)

Occlusion in Dentures: An Original Method to Record Masticatory Movements
Trisoglio, Anita

RUSPA, Aldo (ITALY)

Progress in Magnetic Attraction Through Introsteal Implants
Trisoglio, Anita

SAMRAJ, T. (INDIA)

Periodontal Screening Using Periostest

SANDERS, Peter (UK)

Quality in Practice

SCHWARZ, Eli (HONG KONG)

Patients' Knowledge About and Attitudes Towards Dental Restorative Materials
So, F.H.C.

SOMBORAC, Milan (CANADA)

The TENAX Dental Implant System

Free Communications



Alphabetical listing of Free Communications to be given at the FDI 1994 Congress. Please note that each presentation will be given in the language in which the title is listed here. These presentations are supplemental to the general scientific program.

SPERBER, Geoffrey H. (CANADA)

From Molecules to Morphogenesis to Malocclusion

STEWART, Arthur Van (USA)

Using the DSM-IV-R (CD-9) System for Identifying and Interpreting Possible Behavioural Problems Among Geriatric Patients

Fischer, Jacqueline E.; Friedman, Paula K.

STRELZOW, Anthony (CANADA)

The Use of Antimicrobial Varnish "Chlorzoin" to Reduce the Risk of Caries/Decalcification in Orthodontic Patients

SUH, Kyuwon (KOREA)

Ultrastructure of the Tissue in Vent of Failed Endosteal Implants in Clinic

SWEET, David (CANADA)

Forensic DNA Analysis of Salivary Evidence Recovered from Human Bite Marks

Lorente, Jose; Villaneuva, Enrique

TAM, Timothy (CANADA)

Early Treatment of Class III Malocclusion in Pediatric Dental Practice

TASAR, Ferda (TURKEY)

Odontogenic Cysts with Extensive Bone Destruction (Two Case Reports)

Akkocaoglu; Bulut; Giray; Meral; Ozkuyumcu; Sencift; Tumer

THONG, Yo-Len (MALAYSIA)

Multiple Root Canals in Mandibular First Premolars

Kasim, Noor Hayaty Abu

TOH, Chooi Gait (MALAYSIA)

Surface Microhardness of Adhesive Restorative Materials

TOMASSI, Giovanni (ITALY)

In Vitro Study on the Stability of LDH as Anti-Cariogenic Agent in Confectioner's Products

Grippaudo, G.; Nardini, M.; Ortolani, E.

TREUSCH, Rudolf (GERMANY)

Amalgam is an Immunological Problem and Not a Toxic

TRUMMLER, Andreas (SCHWEIZ)

Fissurenversiegelung Erfahrungsbericht über Fissurenversiegelung mit Heliocel bei einer Liegedauer bis zu 96 Monaten

Trummler, Horst

TVRDON, Martin (SLOVAKIA)

Intracoronally Implanted Fixed Constructions — 3 Year Clinical Experience

Miroslava, Kucharová

TYNAN, James (CANADA)

The Private Practitioner and Public Dental Care Programs: Principles and Practice

VERMEEREN, Jacques (NETHERLANDS)

Long-Term Results (1982-1994) of 5932 ITI Implants

VERZAK, Zeljko (CROATIA)

Silent Period in Subjects with Artificial Occlusal Interferences

Celebi, A.; Cifrek, M.; Magjarevi, R.; Valenti, M.; Varga, S.; Verzak, Z.

WEIGL, Paul (GERMANY)

Intraoral Adhering - A Method Improving Accuracy of Fit of Rigid Tapered Crown Anchorage on Implants

WISEMAN, Michael (CANADA)

Tentative: a) Sotos Syndrome or b) Geriatric Dentistry

YEO, Jinn Fei (SINGAPORE)

General Dental Practice Management Training in National University of Singapore

Koh, M.L.; Liu, H.H.; Lo, G.L.; Tay, K.M.

YEO, Jinn Fei (SINGAPORE)

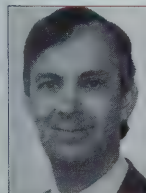
The Lateral Periodontal Cyst — A Diagnostic Rarity

Zhao, Yan Yan

ZUCCHI, Stefano (ITALY)

Fixed Prosthesis on Implants

Speaker Highlight



TORSTEN JEMT

D.D.S., Ph.D.

Göteborg, Sweden

"Recent Prosthetic Advances in Osseointegrated Ad Modum Branemark"

Friday, October 7 (all day) • Hands-on Course

This session is a certification course in the Branemark System, designed to give prosthodontists and general practitioners knowledge about the prosthetic procedures of Branemark Systems. The lecture in the afternoon of Wednesday, October 5 is a pre-requisite for those enrolled in this hands-on session. The topics covered will provide a comprehensive overview of the biological, surgical and prosthetic considerations including a look at problem areas and complications. A step by step presentation of the prosthetic treatment will be presented. Aspects related to partial and single tooth situations will be discussed. A hands-on session is scheduled where handling

This hands-on course has sold-out and we have opened a second one with Dr. Andy Rivest as the clinician.

Dr. Jemt will be participating in Dr. Peter Stevenson-Moore's live-television presentation on Implants. This live TV presentation will take place on Wednesday, October 5 (a.m.).

of Branemark System prosthetic components will be discussed and utilized on laboratory models.

About the clinician:

In 1975 Dr. Torsten Jemt received his DDS at the Dental School, University of Göteborg, in Göteborg, Sweden. From 1976 - 1986 Dr. Jemt held positions of Assistant and Associate Professor at the Department of Prosthodontics, University of Göteborg. Since 1986 he has served as Prosthodontist and Co-Chairman at the Branemark Clinic and as Associate Professor at the University of Göteborg. Dr. Jemt has written approximately 75 scientific publications in the field of prosthodontics, stomatognathic physiology and dental implants. He is a world renowned lecturer who has participated in nearly 300 national and international meetings on dental implants.

CDA LIBRARY



Informed Consent

As a result of many recent inquiries on this topic, a package of articles on informed consent is now available from the CDA Library. The cost to members for this package is \$5, plus tax. It can be obtained by calling the library at: 1-800-267-6354, extension 223. A complete list of all our other packages is also available on request.

The articles contained in this month's package include:

- Layton, S. "Informed consent in oral and maxillofacial surgery: a study of the value of written warnings." *Brit J Oral & Maxillofac Surg* 32(1):34-6, 1994.

- Ray, A.E. and Staffa, J. "The importance of maintaining adequate dental records." *NY State Dent J* 59(9):55-6, 1993.

- Haimoff, E.H. and Rudin, D.E. "Videos enhance patient compliance." *Dent Econ* 83(4):29-30, 32, 1993.

- Bressman, J.K. "Risk Management for the '90s." *JADA* 124(3):63-7, 1993.

- Gommerman, J. "Informed Consent — The Process." *J Can Dent Assoc* 60(3):202-3, 1994.

- Chiodo, G.T. and Tolle, S.W. "Diminished autonomy: can a person with dementia consent to dental treatment?" *Gen Dent* 40(5):372-3, 1992.

- Murrell, G.A. and Sheppard, G.A. "The informed consent treatment report." *J Prosthet Dent* 68(6):970-3, 1992.

- Brown, J.L. "Communicating to avoid liability." *J Calif Dent Assoc* 20(3):57-60, 1992.

- Wright, D. "Avoiding litigation. Oral Surgery in the '90s." *Ontario Dent* 69(1):10-3, 1992.

New Acquisitions

- Alling, Charles C. *Impacted teeth*. W.B. Saunders: Philadelphia, 1993.

- Cohen, Stephen and Burns, Richard C. *Pathways of the pulp*. 6th ed. Mosby: St. Louis, 1994.

- Laskin, Daniel M. editor. *Oral & Maxillofacial Clinics of North America. Current controversies in surgery for internal derangements of the temporomandibular joint*. v.6(4), May 1994.

- Lechner, S.K. and MacGregor, A. Roy. *Removable partial prosthodontics*. Wolfe: London, 1994.

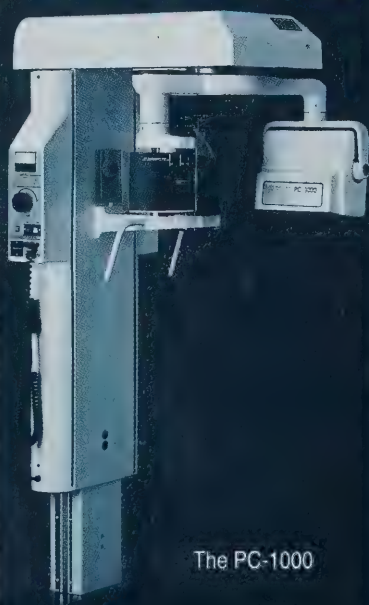
- Stohler, C.S. *Biological and psychological aspects of orofacial pain*. University of Michigan, 1994.

- Worthington, Philip and Evans, John R. *Controversies in oral & maxillofacial surgery*. W.B. Saunders: Philadelphia, 1994

Videos

- *Dudley's visit to the dentist*. Produced by the American Dental Association, 1990. 7 min., 54 sec. ■

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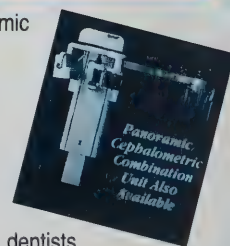
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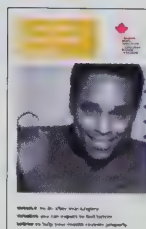
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WHEN you can expect to feel better.

HOW to help your mouth recover properly.

Care after Minor Oral Surgery



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WHY you may need treatment.

HOW bleaching, bonding, and veneers are done.

Bleaching, Bonding, and Veneers



WHAT are crowns and bridges?

WHY you may need a crown or bridge.

HOW crowns and bridges are done.

Crowns and Bridges



WHAT is orthodontic treatment?

WHY you may need braces

HOW orthodontics is done.

Orthodontics



WHAT is root canal treatment?

WHY you may need treatment.

HOW a root canal is done.

Root Canal Treatment



WHAT may be causing your sore jaw.

WHY it is important to treat your TMD.

HOW TMDs can be treated.

TMD (Temporomandibular Disorders)

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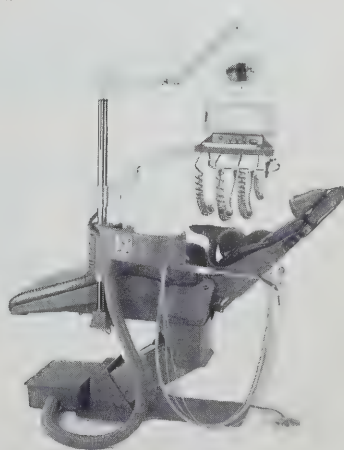
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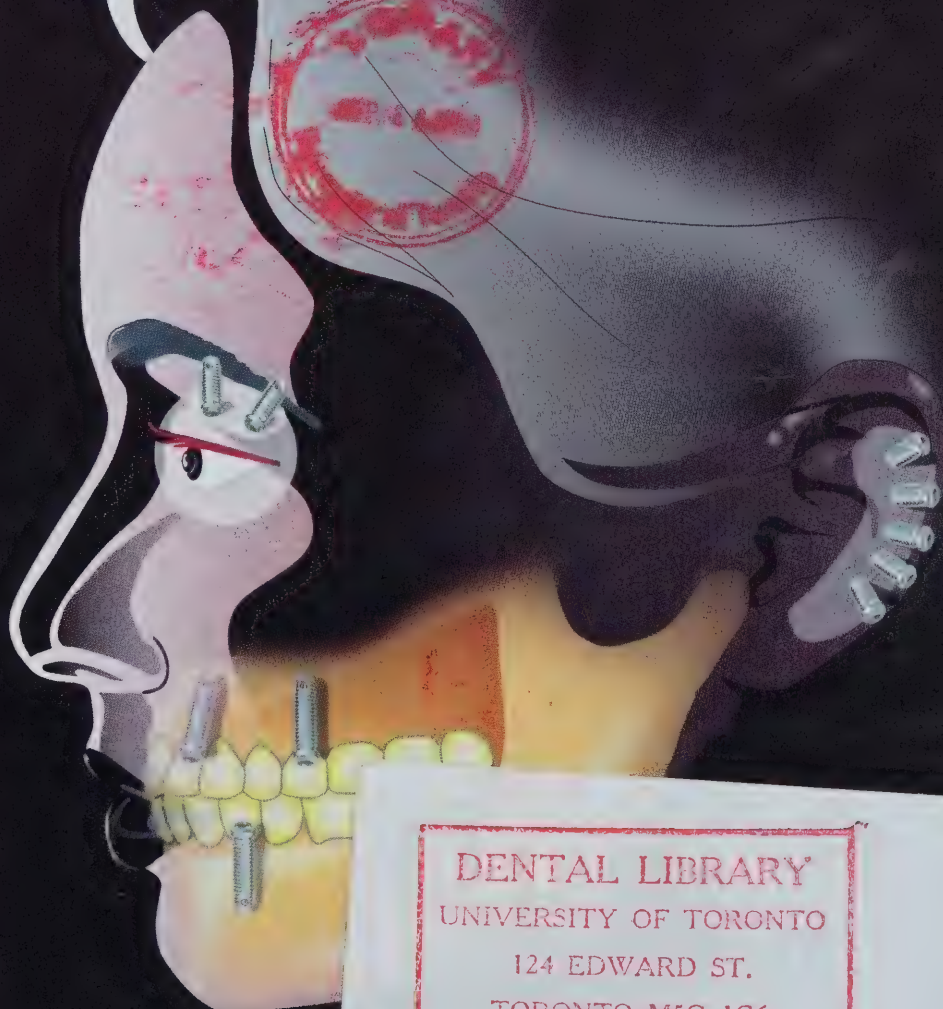
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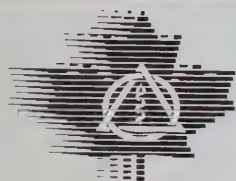
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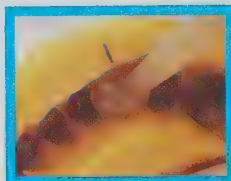
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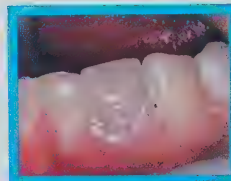


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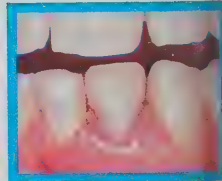
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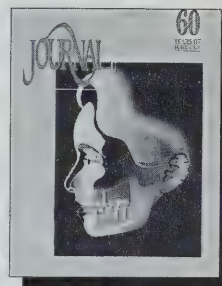
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Cover: Implants (Illustration by Mike Lord, using Sterngold implants)

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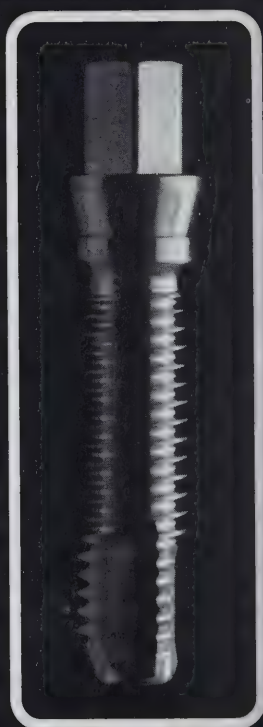
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NATIONAL HIGHLIGHTS

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Annual Dental Meeting
Vancouver, B.C.
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October 13-15, 1994

CDA Teaching Conference
Toronto, Ont.
Contact: Gay MacQuarrie
(613) 523-1770, Ext.: 209

October 22-26, 1994

American Dental Association
Annual Session
New Orleans, La., U.S.A.
(312) 440-2726

November 23, 1994

Toronto Academy of Dentistry
Winter Clinic
Toronto, Ont.
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March 2-4, 1995

B.C. Dental Meeting
Vancouver, B.C.
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November/Novembre 1994

November 3: Dental Nutrition Course in Burnaby, B.C. This continuing education program is sponsored by Biomed. For information, please call (510) 450-1650. To register from B.C. or Ontario, call 1-800-937-8878.

November 3-5: The 1st World's Congress of Croatian Dentists, organized by the Croatian Dental Society and the School of Dentistry, University of Zagreb, will be held in Zagreb. For information, contact: AS - Kongresni Servis, Lastovska 23, 41 000 Zagreb, Croatia. Tel.: 385 41 624 100, 624 101 or Fax: 385 41 624 424.

November 3-5: The American College of Prosthodontics — Annual Session at the Hyatt Regency Hotel, New Orleans, Louisiana.

For information, contact: The American College of Prosthodontists, tel.: (210) 829-7236.

November 9: Dental Nutrition Course in Victoria, B.C. This continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register from B.C. or Ontario, call 1-800-937-8878.

November 12: The Ontario Dental Society of Anaesthesiology's Annual Fall Meeting is being held at the Hilton International in Toronto, Ontario. Speakers will be Dr. Ray Dionne and Dr. Dan Becker. For information contact: Hartley Kestenber, Suite 101 - 305 Milner Avenue, Scarborough, Ont. M1B 3V4. Tel: (416) 299-5449

November 17-19: Odontologisk Riksstämman/Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

November 22-25: Congrès de l'Association Dentaire Française in Paris, France. For information, contact: Dr. Alain Deyrolle, 92 Avenue de Wagram, 75017, Paris, Tel.: (33) 1 42 27 89 00.

November 22-25: XIIIth International Dental Film and Video Festival in Paris, France. For information, contact: Dr. Maurice Dolovici, Secrétaire Général, Association Dentaire Française, 92 avenue de Wagram, F-75017 Paris, France.

December/Décembre 1994

December 25-January 1: Alpha Omega International Dental Fraternity's Annual Convention to be held at the Marriott Eaton Centre Hotel in Toronto, Ontario. For information contact: Sheila Guston, Executive Director, 347 Fifth Ave.,

#703 New York, N.Y. 10016. Tel: (212) 683-4155 or Fax: (212) 683-0027.

February/Février 1995

February 6-12: Barbados Dental Association - 7th Annual International Mid-Winter Meeting 1995
Theme: Emerging Technologies in Dentistry — Implants Endodontics. For information contact: Dr. David F. Cummins Chairperson, Barbados Dental Association Convention. Tel: 1-809-435-2804 or Fax: 1-809-426-2312.

February 15-19: The Jamacian Dental Association's 31st National Convention will be held at the Jamacia Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Florida. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Florida 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada, call 1-800-344-5860.

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst NSW 2010. Tel: 02 331 6920 or Fax: 02 331 7296.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieläisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

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November 24-26: Nitrous Oxide in Dental Practice

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Dalhousie University

October 15: Clinical Pharmacology Update: Important Facts That Protect Your Patients, presented jointly with Dalhousie University and the Annapolis Valley Dental Association at Acadia University, Wolfville, N.S.

October 29: A Practical Approach to Oral Surgery for the General Dentist, Halifax, N.S.

November 19: X-Ray X-Cellence — Part I, Halifax, N.S.

November 26: Dental Assistants in the Lab — Part II, Halifax, N.S.

December 3: Incorporating Periodontics Into General Practice, Halifax, N.S.

December 10: Making It Work (Restorative Dentistry), Halifax, N.S.

For information contact:

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Halifax, Nova Scotia
B3H 3J5

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Fax: (902) 494-2527

Edmonton & District Dental Society

October 24: Prosthodontics/Implants, speaker: Dr. Terry Donovan

November 14: Periodontics, speaker: Dr. Ken Komman

January 20: Endodontics, speaker: Dr. John West

February 24: G.P. Oral Surgery, speaker: Dr. Karl Koerner

March 17: Technology/Marketing, speaker: Dr. Imtiaz Manji

For information contact:

Edmonton & District
Dental Society
PO Box 41124
Edmonton, Alberta
T6J 6M7

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University of Western Ontario

October 29: Lightspeed Endodontics "New Instrumentation for Root Canal Preparation"

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December 2: Basic Rescuer C.P.R. New and Re-Certification

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Continuing Dental Education Office
Faculty of Dentistry, C.D.E.
Room 1003, Dental Sciences Building
London, Ontario
N6A 5C1

Tel. (519) 661-3902
Fax (519) 661-3875

March 16-18: Academy of Sports Dentistry in Anaheim, California.

For information contact: Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel: (905) 823-2008; or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont. L8R 3M2. Tel: (905) 577-0770, or Fax: (905) 577-0721.

March 18-22: Australian Dental Association, 28th Australian Dental Congress in Hobart, Tasmania. For information contact: 28th Aus-

tralian Dental Congress, C/O Mures Convention Management, Victoria Dock, Hobart, Tasmania, 7000. Tel: (002) 31 2121, or Fax: (002) 34 4464.

April/Avril 1995

April 7-8: Southern Ontario Surgical Orthodontic Study Goup meeting in Windsor. For details contact Dr. Jeff Berger at (519) 258-2632, or Fax: (519) 258-2637.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact the AACD Executive Office at 1-800-543-9220.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact: Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent TN2 5TA, U.K.

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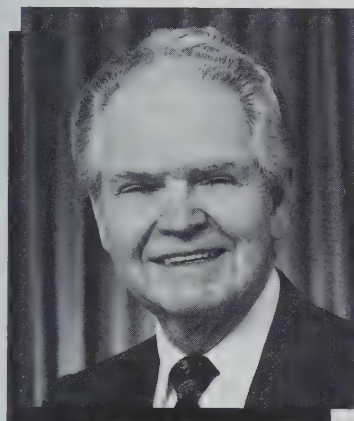
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PAAB

EDITORIAL

WHAT WOULD YOU SAY?



Dr. P. Ralph Crawford,
Editor

Within a period of 10 days, recently, I was asked to speak on three different topics at three different functions. A museum society wanted me to lecture on the history of dentistry, CDA asked me to offer "A Welcome to the Profession" to first year dental students, and a third group asked me to offer the invocation at a formal dinner.

Before you think otherwise, I am not on the lecture circuit.

The only time I'm asked to step up to the podium is when all other resources have been exhausted, and there isn't a more high-profile speaker available, or when cost is a factor. To put all minds at rest, my rates are better than cheap, I speak for free.

But if truth be known, having three requests come in at the same time has caused me considerable concern — if not panic — about what I'm going to say. Each of the three groups seeking my services are distinctly different, and each speech will demand a different approach. One group is made up entirely of lay people, another of young men and women on the threshold of entering the profession, and the third of members of the international dental community, industry people and some of the brightest dental students in the country.

I'll start with the invocation — the shortest but by no means the easiest of my three talks. Demanding just a few sentences, according to *Webster's* it is an invoking of God, a saint, or the muses for blessing, help, inspiration, and protection.

I plan to do something a little different. Instead of thanking whatever supreme being people believe in for our blessings, I'm going to give thanks for all the things we don't have in Canada. Looking over the groaning tables of food before me, I'll give thanks for not having starvation and disease. I'll give thanks that I'm not living or speaking in Rwanda, and that my children don't face insurmountable barriers to achievement in education and commerce. And I will especially give thanks for not having armed conflict in Canada, when at this very moment over 50 of the world's nations are embroiled in the bloody horrors of war.

With the realization that there is so much that we don't have in Canada — and don't want — the rest should be easy. By this time, I hope my heart will be humble enough to realize that in the society I live in, I have so very, very much for which to be thankful. Perhaps I'll even be inspired enough to try and be a better person. And maybe, just maybe, some of the 150 people in the room will feel the same.

Let's turn to the longest, and probably the easiest, public speaking endeavor on my calendar — the one on dental history. I think I'll tell my museum society friends about the gold bridges that the Phoenicians fabricated almost 5,000 years ago. I'll show them ancient dental forceps and cauteries from Pompeii that are not unlike the ones of today. And I'm sure that they will be fascinated to learn how Dr. Horace Wells accidentally discovered surgery without pain, how Goodyear stumbled upon vulcanization when he accidentally dropped rubber and sulphur on his wife's kitchen stove, and how Dr. Edmund Kells lost first his fingers, then his hand, his arm and finally his life experimenting with dental radiology. In closing, I may pull out the solid ivory dentures that I've brought

with me from the CDA museum, and tell my audience how grave robbers made the equivalent of \$1,000 a night stealing human teeth to make that ivory look pretty.

Yes, I think my longest speech will be my best — at least I will have fun giving it.

The most difficult of my three talks will be the 10 minute "Welcome to the Profession" that I'll offer to those eager first year dental students. I won't come out preaching doom and gloom. There is no need to remind people that the current economic situation isn't all that rosy. Instead, at the outset I'll recount the magnificent job that dentistry has accomplished in contributing to quality of life. I'll emphasize that even though dentistry is the only profession programmed for self destruction, the dentist's task is not even close to being finished.

Think about it. As long as 85 per cent of the population fail to floss, as long as we continue to stuff our mouths with cariogenic foods, as long as 40 per cent of Canadians never go to the dentist except in an emergency, and as long as society's needs and wants are off balance, we dentists can be assured that we will be around and needed for a long time.

Finally, I'll speak about the tremendous strides being made in cosmetic dentistry, and the millions of spaces that will be filled with implants and prosthesis that really work. And I'll outline how we are acquiring new skills in educating the public, and how we are becoming much smarter business people as our profession becomes more service orientated. Then I will tell each and everyone of them that as you and I grow older, we will need their keen young minds, their newly-found skills and their eager enthusiasm to finish what we started.

That's what I would say to these three divergent groups. What would you say?

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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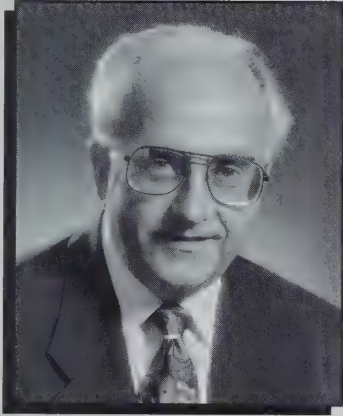
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PRESIDENT'S COLUMN

THE FIGHT MUST GO ON



Dr. Raymond Wenn
CDA President

Where did the year go? It seems like just yesterday that I accepted the chain of office from Dr. Bernard Dolansky, and assumed the responsibility and challenges inherent in the position of CDA president. But it was 12 months ago, this is my last President's Column, and the final countdown to FDI 1994 and the installation of Bryun Sigfstead as CDA's next president is in full swing.

Normally, I'd devote this column to thanking the people who have given me so much support and help during the last 12 months — my management team and executive council, the volunteers who serve on CDA's committees and councils, the members of the board of governors, and CDA's headquarters staff, particularly executive director Jardine Neilson. And I do want to express my sincere and heartfelt gratitude to all of them for their hard work, and for making my year as CDA's president so enjoyable and so rewarding.

But dentistry in Canada is at a turning point, and we're in the middle of a battle to preserve both the oral health of Canadians and the future of our profession. So instead of the traditional goodbye and thanks, I'm going to stand in there

for one more round, and continue CDA's fight to preserve what I consider to be the best dental system in the world.

Let me share with you the speech that I presented to the Academy of Dentistry (AGD) last July:

"It is particularly well-timed that a CDA president can speak with you at this point in history when all of us on both sides of the world's longest unmilitarized border are facing politically-inspired changes to our respective health care delivery systems. And I take great comfort from the fact that the Canadian Dental Association is not alone in the fight to save those attributes that our profession holds most dear:

- Providing the best possible oral health care for our patients;
- Preserving the best of our current oral health care delivery system; and
- Protecting our professional independence as health care providers.

"Just as American dentists have recently launched a campaign to safeguard the best of your existing system within the context of legislating health care reform, so too have Canadian dentists, through CDA, begun an initiative with the same goal. In our case, we are motivated to fight a federal government tax grab on dental plan premiums paid by employers . . .

"The way we hear it, dentistry's message to government is essentially the same on both sides of the border — don't tamper with the solid tradition of a private sector oral health care system that works and works well; don't betray a long-standing trust by trying to deal yourself in where you're not needed; don't tax oral health care.

"In short, as the wise old North American axiom instructs us, "If it ain't broke, don't fix it."

"As distinct from the whole broad field of medical care — where we do have serious, but different, challenges demanding some action in both Canada and the United States, the delivery of oral health care on both sides of the border has been working quite well and getting better. Our patients tell us so. It ain't broke.

"What is broke is the collective North American public sector bank account. And it's worse broke in Canada. Years of extravagant spending and deficit financing have taken their toll. The future of North America's kids and grandkids and their kids and grandkids has been mortgaged to a shameful level. The only good news is that we at last know that the party's over — it's time to pay the bill. Less happy is the knowledge that we will all have to pay our share — individually, professionally and corporately. But we will count our blessings as free peoples and we will pay our fair share to redeem a bright future. You know that this is true in the United States of America, and I know that this is true in Canada.

"But looking at what tax measures my national government has in mind for the oral health care system in Canada calls into question the meaning of fairness and the value of sharing. They have it all twisted, and I'll take just a moment to tell you why we think so. At CDA, we don't think that the delivery of oral health care should be taxed in order to subsidize the continuation of other spending. Overall health care costs already account for over 10 per cent of Canada's GNP. And these costs are growing at the alarming pace of double our economic growth rate. Health taxes such as those the government is pursuing represent an additional cost within the health sector. Why would anyone want to add a multi-billion dollar tax cost on top of this out-of-control burden? How do you get health costs down by adding taxes to force them up? Beats me.

"Politicians, of course, have selective eyesight coupled with lack of foresight and perfect hindsight. Our Canadian minister of finance selectively sees only the revenue side of the issue, and does not see the health care cost side at all. He says, "It's an economic issue — it's not a health issue."

"The minister's bureaucrats in the Department of Finance tell us how tough things are — in the country that is, not for them. They advise us to lay back and accept the inevitable — the taxes are coming.

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"Well, our CDA mission statement reflects our values and principles as professionals — we'd have to abandon the reason for being of our association to lay back and accept this tax grab. We can't just lay back and allow Canadian dentistry to become the economic quick-fix taxation laboratory for cash-strapped governments bent on avoiding the tough solutions in areas they're afraid to touch. They think it will be easy. So it's tempting to the politicians to make the field of oral health care their new-found cash cow, which will help them forestall milking the sacred cows — at least until the next election.

"The temptation of the perceived easy and painless fix seems to have caused the politicians to cross a line. Old trusts and traditions have lost their meaning on the other side of that line. A whole vocabulary and common-sense context for dialogue with government gets turned upside-down and inside-out on the other side of that line. So, what to do?

"As CDA sees it, the only course open is to fight back to take the case to those who will be most injured by such a tax grab — the citizen — the dental patients of Canada. This will not be an easy or comfortable course for us. We are a peaceable association by nature — the authoritative voice of the profession by statement of mission. Canadians are generally regarded as a quieter people and we have, up to now, been able to serve our members and fulfil our mission with a reasonable, rational and low-decibel voice when addressing governments and the people of Canada.

"But we have concluded, sadly, that the well-modulated approach just won't cut it if we want to effectively defend the best oral health delivery system we've ever had against the desperate grasping of government. So we're going to raise the decibel level and we're going to broaden the audience. We know that the principle at stake demands a strong response and we know that the urgency to act and to be seen to be acting vigorously is upon us. To describe the situation in terms that would best be understood by our American friends and Colleagues,

we see the government's intentions as representing "a clear and present danger."

"We know the battle won't be pleasant. Long-standing relationships will be strained and damaged. The politicians will accuse us of unbridled self-interest. They will say that we are only concerned about our own pocket books. That will be the first red herring to be dragged across the field.

"Next will come the accusation that we don't want our profession and its clients to pay their fair share of the bill. Their only defence will be this kind of smoke-screened offense. We will have to ignore the traps of the red herrings and smoke screens. We will have to keep public focus on the issue.

"The simple fact is that we are fighting a tax grab on health care. This will wreak its more damaging effects on those who can least afford it — that's fact. It will cause economically-induced delays in seeking diagnosis and treatment — that's fact. The level of overall oral health in Canada will decline — that's a certainty.

"Good dentists will continue to make a good living and pay their fair share of taxes — that's fact. And dentists and patients aren't the stimulus for the widespread and dangerous level of tax-revolt mentality pervading our societies. Taxes on health care will only deepen public cynicism and heighten public anger — that's fact. It scares me how blind governments can be to these facts. Speaking moderately in select circles won't cure their blindness — we've tried that approach and it just isn't working anymore.

"So we're "going public," more in sorrow than in anger, to fight the government on its own turf, and using tactics that it comprehends. Needless to say, we will need all the help we can get. We feel confident of the support of our CDA membership. Any help available from your organization (the AGD) through its Canadian members would be warmly welcomed. We will keep you posted on our battles, and we will continue to appreciate briefings and updates on yours as our two organizations struggle with managing change in increasingly tough political environments . . .

"Dentistry has no borders, and many of the issues and concerns that you're facing are being shared by us and visa versa. Whether it's establishing infection control guidelines, defending the use of mercury amalgam, explaining the benefits of fluoride, introducing a perio screening program to our members or challenging government's tax grabs, our needs are the same, our paths to solutions are similar and dialogue remains paramount . . ."

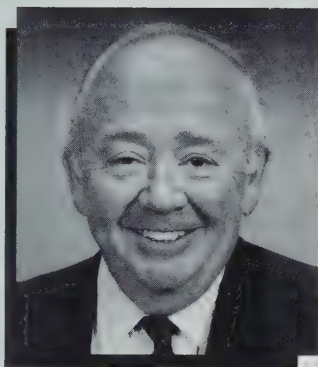
Although I will step down as CDA's president next month, I will not give up my personal fight to preserve Canada's wonderful dental system, and the high oral health status of all its citizens. Both are too valuable to let go, and all of us have a role to play in ensuring their preservation.

I offer my thanks to Drs. James Brookfield and Bryn Sigfstead, my management team; Drs. John Digens, Barry Dolman, Toby Gushue, Richard Sandilands, David Somer and Bernie White, my executive council; Jardine Neilson, our capable executive director; and all the staff at CDA for their help and support in my year as CDA's president, and I pledge to do whatever I can to help Dr. Sigfstead and his team win the ongoing tax fight.

When I pass the chain of office to Dr. Sigfstead next month, I will step down as CDA's president knowing that our association is in very good hands. For me personally, it has been an exhilarating year, and I will cherish my memories forever.

*Raymond Wenn, DDS
President of the Canadian Dental Association*





The Ability To Understand Disability Insurance

Dr. Rod Moran, President of CDSPI

In my conversations with fellow dentists, I often field a lot of questions about one particular type of insurance — disability. Most dentists seem to understand the basics of long-term disability insurance, but many are not fully aware of some of the more important details. And there are still a few areas of disability insurance that are commonly misunderstood.

So, I'm going to devote this column to clearing up some of the foggy areas that seem to surround disability insurance, and inform you about some of the key aspects of this all-important coverage. First, though, let me give you a capsule description of disability insurance and explain why there's such a need for it.

If you suffer an illness or injury that prevents you from working, long-term disability insurance will provide you with a monthly benefit to replace your income until you recover. As such, disability insurance is an important perk for most employees with access to a company benefits plan. However, since most dentists are self-employed, and not covered under a company group plan, they must purchase this insurance independently.

There are two main reasons why disability insurance is so important. One is the high likelihood that a disability will occur. Statistics show that nearly one-third of Canadians will suffer a disability between the ages of 35 and 65 that prevents them from working for at least six months. The other reason, of

course, is the severe financial consequences associated with a disability. Think of what you earn in six months, and then imagine living without that income.

Disability insurance is important. In fact, the claims paid out to dentists participating in the Canadian Dentists' Insurance Program (CDIP) long-term disability plan in 1993 totalled more than \$2 million.

Comparing Disability Plans

Since people in the insurance industry know how important disability coverage is to dentists, members of our profession are approached rather regularly by agents and brokers.

Sometimes CDIP's long-term disability group plan gets compared to other private plans, in ways that may cause confusion. For example, private plans are often termed "guaranteed renewable, non-cancellable." This term doesn't apply to group plans like CDIP's, but that's not cause for alarm. Group plans are renewable annually, and the insurance carrier cannot legally cancel your coverage. The truth is, as long as you pay your premium you will always have disability coverage.

Another cloudy area I'd like to clear up concerns a particular aspect of the definition of disability. Consider what would happen if you suffered a disability that prevented you from practising dentistry, but you earned income in another occupation. Would you be

disabled according to the definitions and conditions of your policy, and still be able to collect disability benefits? In some plans, a provision to receive benefits while working in another occupation is included in the basic part of the plan. In others, like the CDIP plan, it's not included in the basic part of the plan — since not everyone wants to pay for this coverage — but it's easily available simply by choosing the "own occupation option."

It can be as difficult for a dentist to grasp the complexities of disability insurance as it would be for an insurance agent to understand the finer points of an apical filling and reimplantation with splint. Fortunately, when you have a disability policy to evaluate, or want to make sure you're getting what you need for the premium you're paying, you can take advantage of CDSPI's Insurance Review Service. Simply send the policy to CDSPI, and we'll have an independent reviewer evaluate it — at no cost to you. I strongly recommend this service to any dentist who's uncertain about which disability plan to choose. Call CDSPI at 1-800-561-9401, extension 231, for more information.

Getting the Right Coverage

Another area worth clarifying is the application process. Some dentists don't understand how the level of available coverage and the maximum monthly benefit amounts listed in the *Income Ratio Guide* are established.

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The *Income Ratio Guide* lists a series of annual income ranges, and a maximum monthly benefit for each range. On a yearly basis, the monthly benefit listed for lower income ranges usually works out to be about 60 per cent of the corresponding annual income.

Why not 100 per cent? A closer look at the table reveals that the annual income listed is a pre-tax figure. In reality, since the benefits paid out through the plan are not taxable, they are very close to the after-tax income that a dentist in the corresponding income range would accrue. This — and the fact that higher earners fall into higher tax brackets — largely explains why the monthly benefit for each salary range, as listed in the *Income Ratio Guide* table, represents a smaller percentage of total income as salary ranges increase.

Actually, calculating the exact benefit levels listed in the table involves a bit more than just adjusting for tax. I won't go into a detailed explanation of how the insurance industry works. But in a nutshell, disability benefits are set to encourage optimum-length disability periods so that premiums can be kept reasonable for everyone in the plan.

On occasion, I've also been asked why dentists have to submit financial information when they apply for disability coverage (a procedure that is standard in the industry). First and foremost, it is to ensure that you have the appropriate level of coverage. Consider an example. Your benefit payments are based on your income at the time of the claim. The amount of these payments wouldn't change even if you had mistakenly been paying for a higher level of coverage. Checking the financial details at application time can ensure that you don't pay extra premiums for benefits you won't be able to collect.

In addition, having obtained financial data as part of the application process, the insurer ultimately has less information to gather should you ever have a claim. The result can be a quicker and easier process for you at a time when you

don't need additional complications in your life.

How CDSPI Helps With Claims

Even with this advance work, not every claim will be simple. From time to time, I hear about people who are dissatisfied with an aspect of the disability claims process. I believe that this occurs primarily because disability insurance involves more grey areas than other type of insurance — such as deciding what qualifies as a disability, or determining when a person is able to return to work. These cases are rare, and they're not specific to any one insurer, but when they involve a dentist and the CDIP long-term disability plan, naturally I'm concerned.

The question of whether CDSPI can help to resolve a claim typically boils down to what we are legally entitled to do on your behalf. Since you are assured of confidentiality regarding the medical and financial information you sub-

mit to the insurance company, CDSPI cannot intervene in any way that would involve disclosure of this information. This means we cannot act on your behalf on matters pertaining to the validity of a disability, the amount and duration of benefits, and related areas of adjudication.

There are, however, a great many areas where we can — and do — make long-term disability claims go more smoothly. For instance, helping you to complete forms, relaying information on your behalf to the insurer, helping speed things up in the event of delays, and providing information on your coverage.

Providing information is a great benefit in itself, since long-term disability insurance is not always as straightforward as other types of insurance. I hope I've helped to give you some insights into the workings of this coverage, but please feel free to find out more by calling the friendly experts at CDSPI. ■

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	July 31, 1994	June 30, 1994	
Bond & Mortgage Fund	10.84682	10.66538	-0.9%
Common Stock Fund	23.19638	22.27176	8.0%
Money Market Fund	67.65421	67.13828	4.2%
Balanced Fund	41.53477	40.27440	3.6%
Aggressive Fund	9.08633	9.44242	N/A
G.I.C. Fund			
Term	July 31, 1994	June 30, 1994	
1 yr	7.20%	6.25%	
2 yr	7.90%	7.00%	
3 yr	8.30%	7.25%	
4 yr	8.50%	7.50%	
5 yr	8.65%	7.75%	

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of:

July 31, 1994	June 30, 1994
\$185,838,046.00	\$183,443,122.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

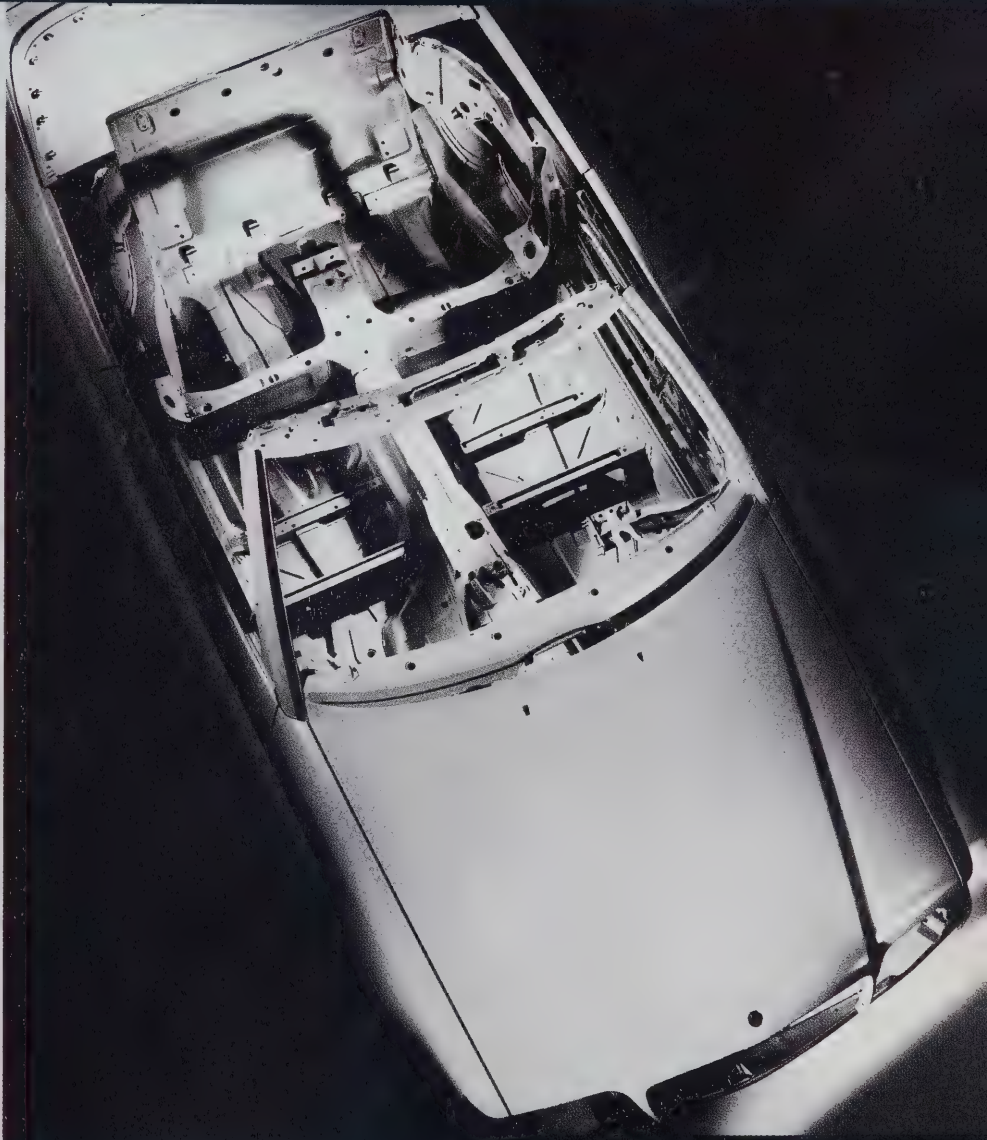
or phone, toll free:

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1-800-561-9401 Service in English
Extensions:
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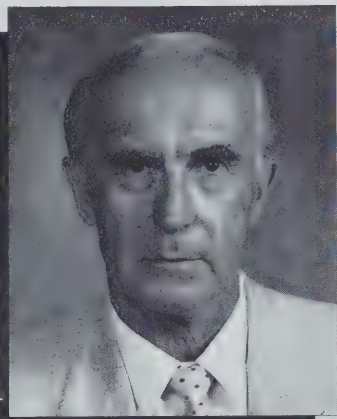
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NEWS UPDATE

Montreal Study Club Names New President



Dr. Gerard Weinlander

Dr. Gerard Weinlander will preside as president of the Montreal Study Club for the 1994-1995 term.

Founded in 1897, the club is one of the oldest of its kind in Canada. Serving with Dr. Weinlander on the 1994-1995 executive are past-president, Dr. Olga Skica; president-elect, Dr. Sam Sgro; vice-president, Dr. Mike Percio; secretary, Dr. Petra Dando; treasurer, Dr. Frank Kay; and historian/archivist, Dr. Leo Moran. ■

CDA Set to Launch New Periodontal Program

CDA, in conjunction with the Canadian Academy of Periodontology (CAP) and Procter and Gamble Canada Inc. plans to introduce a new periodontal screening and recording program (PSR).

The program, to be introduced in late 1994 or early 1995, is modeled on a similar program that was launched in 1992 by the American Dental Association, the American Academy of Periodontology and Procter and Gamble in the United States.

PSR is a fast, simple and effective program. Consisting of a manual, recording forms and a specially-de-

Alberta's Class of 1944 Holds 50th Reunion

Nine of the 13 students who graduated from the University of Alberta's faculty of dentistry in 1944 came together for a unique 50th reunion celebration recently.

The special event began with a dinner in Vancouver, followed by two days of relaxation and reminiscing in Whistler, B.C.

Members of the small wartime class recounted that although they had different ages, backgrounds and circumstances in 1944, the striving together they experienced during their stressful, yet fun-filled undergraduate years forged such a strong bond between them that their mutual friendship has survived for over half a century.

"It was agreed," said Dr. Ralph Duncan, one of the graduates, "that we enjoyed the best and most exciting 50 years of dentistry. It is a great profession, and we are honored to be participants." ■



The class of '44 — 450 years of dental experience (l to r): Drs. Douglas Warren, Vancouver; Stephen Yaremechuck, Edmonton; Ralph Duncan, Shawinigan Lake; Allan McDougall, Seattle; Allan Fee, Edmonton; Steln Walhoud, Penticton; Art Fraser, West Vancouver; Lloyd Mallin, Vancouver; Wilf Cotter, Saskatoon.

signed probe, it helps dentists to assess the periodontal health status of their patients and summarize the results. As such, PSR is designed to be incorporated into the oral examination.

The new program is planned for introduction in three stages — to periodontists who assist general practitioners in their initiation of the program; to general practitioners; and then directly to patients through a multi-faceted media relations campaign.

See the CDA *Journal* and *Communiqué* later this fall for more details. ■

Dr. W.J. Sharun To Lead Alberta Dental Association

Dr. W.J. (Bill) Sharun of Edmonton has been elected president of the Alberta Dental Association (ADA).

Since graduating from the University of Alberta's faculty of dentistry in 1974, Dr. Sharun has been in private practice in Edmonton. He assumed his responsibilities as ADA president July 1.

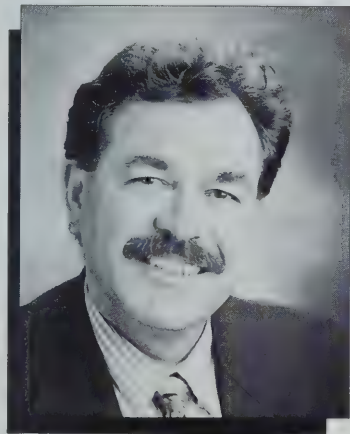
Serving with Dr. Sharun on the 1994-1995 executive will be: president-elect, Dr. R.C. Beauchamp, Edmonton; vice-president, Dr. D.R.

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Smith, Valleyview; past-president, Dr. W.J. Hollingshead, Red Deer; executive director, Dr. Gordon Thompson.

ADA is the licensing authority and professional voice for Alberta's 1,450 dentists. ■



Dr. W.J. Sharun

Dental Implant Research Centre Established in Israel

A unique dental implant and research centre will be established in the Hebrew University-Hadassah School of Dental Medicine to document and establish long-term follow-up studies on the utilization of dental implants.

Made possible by a \$500,000 gift from Dr. Gerald Niznick of Encino, California, the centre will occupy the top floor of a new three-floor wing that is currently under construction.

Dr. Niznick, born and raised in Fort Francis, Ontario, received his dental degree from the University of Manitoba in 1966. Following graduate training at the University of Southern California in 1967 and Indiana University 1969, he pursued a keen interest in implantology. This eventually led to the development and marketing of the Core-Vent system in 1982.

In 1991, Dentsply International entered into an agreement to acquire the Core-Vent system, with Dr. Niznick retaining ownership of Core-Vent Bio-Screening Inc.

Leading Hygienist Receives Honorary Law Degree

Professor Margery (Marnie) Forgay, who founded the University of Manitoba's School of Dental Hygiene in 1963, received an honorary doctorate of law degree from Dalhousie University in Halifax, Nova Scotia, May 27, and gave the convocation address.

The first Canadian dental hygienist to be honored in such a manner, Prof. Forgay earned her diploma in dental hygiene from the Eastman Dental Dispensary in Rochester, New York, in 1952. She subsequently obtained a BA from the University of Saskatchewan in 1955, a B.Ed. from the University of Manitoba in 1976, and an MA from the University of British Columbia in 1980. In 1985 she was appointed director of the School of Dental Hygiene at Dalhousie University for a five-year term, by a special arrangement with the University of Manitoba.



Prof. Margery Forgay

In 1992-93, while on study leave, Prof. Forgay was adviser to a Canadian International Development Agency (CIDA) sponsored dental project to train primary oral health personnel in Beira, Mozambique. A teacher and a leader in the development of dental hygiene education for more than 30 years, she resigned her position at the University of Manitoba August 1, 1994. ■

The Hebrew University-Hadassah School of Dental Medicine was founded by the Alpha Omega Fraternity. ■

Maxine Borowko Elected As CDHA President

Ms. Maxine Borowko of Maple Ridge, British Columbia, has been elected president of the Canadian Dental Hygienists Association (CDHA).

A community dental hygienist, Ms. Borowko provides dental hygiene services to handicapped patients through programs funded by British Columbia's Ministry of Health. She earned a diploma in dental therapy in 1974 and one in dental hygiene in 1984, both from Wascana Institute (now the Sas-



Ms. Maxine Borowko

katchewan Institute of Applied Science and Technology) in Regina.

Ms. Borowko was elected as CDHA's president during the association's 5th annual professional conference, hosted by the Saskatchewan Dental Hygienists Association, and held in Saskatoon June 17-19, 1994. ■

Dr. Michel Couture Elected CAP President



Dr. Michel M. Couture

Dr. Michel Couture of Montreal has been elected president of the Canadian Academy of Periodontology (CAP) for the 1994-1995 term.

A 1983 graduate of the faculty of dentistry at the University of Montreal, Dr. Couture went on to receive a diploma in periodontics from the University of Toronto in 1987. He now conducts a private periodontics practice in Montreal, and holds teaching positions in the faculty of dentistry at both the University of Montreal and McGill University. He is also associated with the multidisciplinary residency program at Royal Victoria Hospital.

Serving with Dr. Couture on the 1994-1995 executive are: president-elect, Dr. David Singer, Winnipeg; secretary/editor, Dr. Marlene Mader, St. Catharines; treasurer, Dr. Patrick Pierce, Edmonton; member at large, Dr. David Tisch, Toronto.

During the business session of its recent annual meeting, CAP also paid special tribute to Dr. Malcolm Miller of Calgary, Alberta. An active member of the academy since 1982, Dr. Miller served as an executive member from 1983 to 1991. He also served a term as president, in 1991-1992.

Although he has stepped down from CAP's executive, Dr. Miller continues to be "in harness" serving as an archivist and historian. ■

Ottawa Dental Society Raises \$25,000 For Worthy Cause

A program presented last May by the Ottawa Dental Society — "Just Say Yes 1994" — raised almost \$25,000 in support of a local treatment centre for youths with drug and alcohol problems.

Part of the society's annual dinner meeting, the fund-raising program was capped by an unique and highly successful auction that included items such as an inside look at Parliament Hill with *Sunday Edition* star Mike Duffy and an original "Herman" cartoon by Jim Unger.

Proceeds will be used to build a new library and exercise facility at the David Smith Youth Drug & Alcohol Treatment Centre. The centre is dedicated to helping young people in the Ottawa area overcome problems with substance abuse. It subscribes to a holistic and structured psycho-social treatment program, and specializes in the hard-to-serve age group of 14-18 years olds. ■



Dr. John Kershman (l), chairman of the Ottawa Dental Society public relations committee, presents a cheque to Mr. Philip Moorman, executive director of the David Smith Youth Drug & Alcohol Treatment Centre.

Canadian Foundation for World Development Issues Urgent Appeal

Mr. Kenneth G. Davis, the president and founder of the Toronto-based Canadian Foundation for World Development (CFWD), has issued an urgent request for dental equipment, instruments and supplies.

The materials are needed to support the work of Elina Katsman, a hard-working Canadian who heads a team of dental workers in the Dominican Republic. Using four clinics and two mobile units, Mrs. Katsman and her team provide treatment to thousands of Dominicans desperately in need of dental care.

Mrs. Katsman, who is married to a Dominican and the mother of two children, first set foot on Dominican soil in 1987. Since then, she has shown extraordinary leadership in the delivery of dental health education and preventive treatment.

"We monitor everything she is doing and can assure you that you could not support anyone more worthy of your help," said Mr. Davis in a letter to the Canadian dental profession. "In April, May and June, her team gave dental treatment to 7,710 patients. Her staff includes 20 dentists and 17 assistants, plus a crew of 50 volunteers."

Topping Mrs. Katsman's priority list are 60 high-speed dental engines, 40 low-speed engines and 10 autoclaves. She also desperately needs a long list of other instruments

and consumables, which includes nearly every material in a normal dental armamentarium.

Dentists wishing more information may contact Mr. Kenneth Davis at the Canadian Foundation for World Development, 2441 Bayview Avenue, Willowdale, Ontario M2L 1A5, or phone (416) 445-4740; fax (416) 441-2573. ■

B.C. Dental Assistants Hold Annual Meeting

The Certified Dental Assistants Society of British Columbia held its annual general meeting May 14, 1994, in Kelowna.

Elected to the board of directors for the 1994-1995 term are: chairperson, Lane Shupe, Kelowna; Susan Kennedy, Coquitlam; Janice van Veen, Coquitlam; Karen Anderson, Victoria; and Alison Hall, Salmon Arm. Marlene Robinson of Vancouver will serve as manager of member services. ■

Cycling For Transplant Research

As a member of the Canadian Coalition on Organ Donor Awareness, CDA will be watching with interest as Suzanne MacLean cycles her way across Canada to bolster public awareness and raise funds for organ transplantation.

The 27-year old Montreal native has more than a passing interest in organ transplantation. Two years ago she experienced total kidney failure, and has now joined the thousands of other Canadians on the waiting list for a life saving transplant.

Ms. MacLean, who expects to bike 100 km per day during her cross-Canada ride, is being supported by The Mutual Group through its By Mutual Consent program, which is intended to increase public awareness of the critical need for organ donation. ■

Montreal Researchers Study New AIDS Drug

A new compound may be a boon to people infected by HIV or suffering from full-blown AIDS say a group of Montreal researchers.

ABSTRACT

Mercury Levels In Plaque From Teeth With Amalgam Restorations

The amalgam and mercury debate rages on and research into the many facets of mercury disposition and emanation from silver amalgam restorations continues. The authors of this study investigated the levels of mercury in human dental plaque and the effect of various bacteria on the release of mercury from amalgam *in vitro*.

There were 15 participants in this study. The first group (Group 1) was comprised of 10 individuals with amalgam restorations at least two years old. The five participants in Group 2 had no amalgam restorations.

All participants were asked to avoid any oral hygiene measures for a 24-hour period. Plaque was then collected from each participant in Group 2 from all teeth. Plaque collection from individuals in Group 1 was from amalgam surfaces and from intact enamel in separate samples for separate analysis. The results from the plaque analysis in Group 1 participants were pooled for comparison.

The plaque samples from Group 1 volunteers showed a statistically significant increase in plaque mercury levels from teeth

with amalgam restorations as opposed to teeth without restorations in the same mouth. There was no mercury found in plaque samples from the participants without amalgam restorations. Mean mercury levels in individuals with amalgam restorations were two micrograms. This is similar to levels found in other studies.

The authors also studied the effects of bacterial biofilms on the release of mercury from amalgam *in vitro*. Analysis showed that mercury release rates decreased except in the presence of *Streptococcus mutans*. *Streptococcus mutans* appeared to actually cyclically facilitate the release of mercury from amalgam *in vitro*. In vitro study of amalgam aged for two years showed that there was little mercury release even with a biofilm of *Streptococcus mutans*. The lower release of mercury from amalgam that is two years old is thought to be due to the build-up of a layer of tarnish on the surface of the metal. This layer forms a passive non-reactive barrier that resists the release of mercury.

The study concludes that significant amounts of mercury are released from new dental amalgam but aged amalgam does not release much mercury to the bur-lap of a passive tarnish layer. ■

(Lytle H.S. et al, *J Dent Res* 72:1320-1324, 1993)

Reprinted with permission from *Dentalletter*, July/August 1994.

Mohamed Ben Amar, Richard Morisset, Guy Poirier and Parviz Ghadirian presented their findings during the Tenth International Conference on AIDS, held in Yokohama, Japan, August 7-12, 1994.

In a study carried on at Hôtel-Dieu Hospital in Montreal, Quebec, the four researchers demonstrated that a new compound, GSPH-1, has both significant anti-HIV and immunostimulant activities in HIV-infected patients with fewer than 500 CD4⁺ lymphocytes/mm³ at the outset of treatment. Equally important, after 16 months of treatment, the

drug has not demonstrated any toxicity at therapeutic doses.

This study shows that in HIV-infected individuals, GSPH-1 is capable of stimulating, in a very significant and sustained way, the production of CD8⁺ lymphocytes — key elements in the control of HIV infection. Furthermore, the activation of CD8⁺ cells seems to have contributed to patients' clinical and immunologic benefits.

It appears that GSPH-1 could be used not only as a therapeutic agent in advanced HIV infection, but also as a prophylactic agent in patients recently infected. ■

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THE FORUM

RECORDS IN LONGEVITY

ON THE front page of the *London Times* during 1934, the deaths of 460 persons 90 years old and over have been recorded. Of these, 127 were men and 333 were women. Of the latter, 207 were married. The centenarians who died in 1934 numbered 11, one only of whom was a man, and six of the women were married. In Ireland the burial of a woman aged 123 was recorded. The oldest

man in Austria, who recently carried off first prize at a village dancing competition, died at 110. The oldest women in Western Canada, Mrs. Marie Greenwich, of Edmonton, Alberta, died at the age of 109. The oldest women in Germany died at 106.

— *Excerpt from foreign letters in the Journal of the A.M.A., March 9, 1935.*

FEE-CUTTING

THE artist or the professional man who sells his talent or personal service below the fee established by competition is guilty of personal suicide.

One cannot win the stakes in the economic

game except by playing the cards according to the rules, and the rules are always right. If you break them they get you in the end.

— *Dental News.*

SMOKING AND ITS DANGERS

NICOTINE is the most harmful of the products of tobacco smoke; much less so are the hydrocyanic acid, volatile pyridine bases, ammonia, sulphuretted hydrogen and carbonic oxide. According to L. Frank of Berlin, about 25 per cent of the total nicotine reaches the mouth, and according to van Druten, the average nicotine content of Turkish cigarette tobacco is 1.2 per cent, and of ordinary cigars 1.7 per cent. The damage to health depends very much on the manner of smoking. With inhaling, which is very common in cigarette smokers, eight to 17 per cent

of the nicotine is taken into the system, and only 2.5 to 4.5 per cent without inhaling. The paper of the cigarette probably does no harm. The commonly accepted harmlessness of pipe smoking is attributable to the small amount of nicotine in the tobacco, only 0.5 to 0.8 per cent, which is due to the method of preparing it. The harmful effects of tobacco smoking may be very largely prevented by selecting the material, by refraining from inhaling and by moderation.

— *Deutsche Zahn. Woch., No. 48, 1934.*

DIETARY SOLICITUDE

OBVIOUSLY abuse can wreck a sturdy frame, but it is also true that no amount of dietary solicitude, and no heroic devotion to a "daily dozen," will carry an individual into advanced old age if he has a constitution

inadequate for the journey. To put it another way: it makes less difference what you *do* than what you *biologically are*.

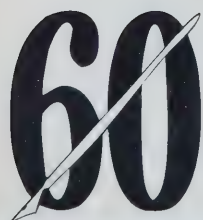
— *Raymond Pearl, Professor of Biology, Johns Hopkins University.*

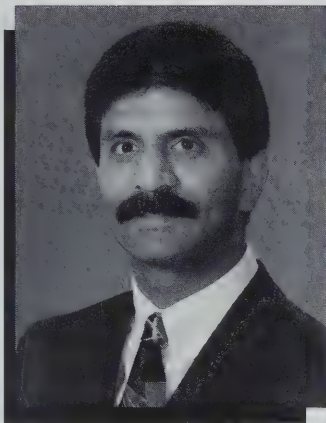
Diamond Jubilee of Publication

Throughout 1994, the *Journal of the Canadian Dental Association* celebrates 60 years of publication as the authoritative "voice" of dentistry in Canada. Each month, in commemoration of its Diamond Jubilee, the *Journal* will reprint an article from Vol. 1, 1935.

This month, we reprint a column that was first introduced to the *Journal* in May 1935 — *The Forum*. Intended to provide snippets of

interesting information to Canadian dentists, in original material and through excerpts from other publications, *The Forum* was usually followed by a cartoon from *Punch*. It often looked at the light side of dentistry, adding an element of humour to the *Journal*. This edition of *The Forum* appeared in the September 1935 issue of the *Journal*.





Imtiaz Manji, B.Sc.

Principal of ExperDent

Is Dentistry in Trouble With Ethics?

In the *Concise Oxford Dictionary*, the definition given for ethics is: *n.pl.* (also treated as *sing.*) 1. the science of morals in human conduct. 2. a) moral principles; rules of conduct. b) a set of these (*medical ethics*).

This definition of ethics is just what it purports to be — a definition. It tells us, in a vague sense, what ethics are about — principles, morals, rules and codes of conduct — yet it doesn't describe anything with exacting precision (nor can it be expected to). Any definition of ethics (and what is ethical) is bound to be somewhat intangible, and certainly relative and variable.

Whether we're aware of it or not, we face daily examples of the relativity and variability of ethics. Consider the realm of commercial advertising. While some may cringe at the tactics used in many ad campaigns, believing them to be blatantly misleading or particularly offensive, Western societies, for better or for worse, have grown accustomed to them.

Other than the vocal few and those who engage in personal protests (i.e., a refusal to buy a particular product or service out of principle), most of us do not get actively involved in challenging the advertising ethics of the offending companies. However, that isn't to say that we don't assert our sense of ethics in other arenas when we feel violated or outraged.

One example that comes to mind is the reactions evoked in most of us when we see someone

parking their car in a space reserved for handicapped people, particularly when this individual has no right to do so. The perpetrator is likely to be subjected to a variety of ethical responses, from subtle yet definitive "dirty looks" to verbal reprimanding.

Ethics and Dentistry

So what does all this ethical discussion have to do with dentistry? Although the large majority of practitioners adhere to the profession's shared values (detailed in the Canadian Dental Association's Code of Ethics and similar documents adopted by the provincial licensing authorities), the suggested guidelines are not black and white. It is those "grey" areas — where individuals have to make their own subjective decisions — that can sometimes cause colleagues, patients or the public to perceive certain actions to be downright unethical or, perhaps, pushing the limits.

In these instances, the offending dentists often have no intention of acting unethically. At the time, they may sincerely believe that their actions are professionally honorable. Later, the 20/20 vision that comes with hindsight may precipitate a re-think, and these dentists may end up seeing the legitimacy of the claims questioning their ethical conduct, but not always.

A much rarer but more serious situation concerns those dental practitioners who are knowingly, deliberately and sometimes repeat-

edly breaching the ethical code of the profession. Somewhere along the way, they have lost their sense of duty and obligation to patients, the public and dentistry. We all know of examples of this, from the dentist who tries to reduce overhead by hiring unqualified staff at low salaries, and requires them to perform duties for which they aren't licensed, or the one who submits fraudulent insurance claims.

The Fallout of Unethical Conduct

Unintentional or intentional, breaches of professional conduct can take many shapes and forms, too numerous to cover here. But in my recent experience, potential ethical trouble spots for dentistry exist in three distinct areas:

- marketing
- principal/associate arrangements
- patient treatment

The Marketing Mess

Consider these dental truisms:

1. dentistry is now highly competitive in many areas of the country;
2. advertising and marketing guidelines are more relaxed than in the past. If you couple these truths, logic dictates that some form of marketing is a requirement for success in the profession. It's how this marketing is done that gets some dentists into hot water.

While some dentists welcomed the 1990 Supreme Court of Canada ruling that loosened the strict rules

for professional advertising, others winced. Regardless of which side of the fence you're now on, one thing is certain: more freedom means more responsibility. And in the desire to succeed, it is often this responsibility that some dentists mishandle. Complaints to the licensing authorities, and the resulting discipline decisions, demonstrate that the tension is thick between those dentists who are testing the ethical waters and those who are infuriated by their actions.

If you're considering engaging in some form of advertising or promotional activity (external marketing), keep in mind that maintaining your credibility with colleagues, patients and the public is paramount. Because once you dabble in unethical marketing, which devalues the integrity of the profession, you'll find that disassociating yourself from it will be akin to trying to get out of quicksand. For more detailed information on this, see "The Do's and Don'ts of Marketing" in the August 1993 issue of the *Journal* (Vol. 59, No. 8, pp. 657-658).

The best way to market yourself is to do so internally — with your existing patients. By creating value for your service and skills with this audience, you will retain them and stimulate referrals. Given the present economic forces at work in Canada — the threat of a tax on employer-paid dental benefit premiums, the narrowing of insurance coverage, and a trend toward cost cutting by employers — all of which increasingly stand to make dentistry a discretionary expense item, loyalty marketing is definitely where it's at.

Principal/Associate Arrangements

With the surplus of dentists in many parts of Canada, it's a daunting task for most new dentists to consider setting up a practice from scratch. As such, new graduates often enter existing practices as associates, with the option to buy-in. This type of agreement can be mutually beneficial: the new grad (who's often carrying a hefty debt after years of schooling) doesn't have the headaches and costs associated with "setting up shop," and

the established dentist, who may want to wind down or retire, can reduce the number of hours he or she spends in the practice without jeopardizing goodwill or patient care.

Yet, despite the great potential of these "business marriages," there are more than a handful of stories about soured principal/associate relationships, in which one or both of the parties feels "taken." For the principal, it may be anger that an associate leaves the practice and moves to a nearby location, drawing from the same pool of potential patients or actually "taking" the principal's patients. For the associate who buys in, it may be a realization, albeit too late, that the practice goodwill was overvalued by the principal dentist, and that the purchase price was inflated. Alternatively, it may be that the principal is postponing the date of the buy-in, which throws a curve ball into the associate's plans for practice ownership/partnership.

Such scenarios can and should be avoided. A written, legal agreement outlining all the details of the principal/associate relationship, including the appropriate time-line and logistics for the buy-in, is imperative. The principal dentist should not sign such a document unless it includes a restrictive covenant that, if enforced, precludes the associate from practising within a certain radius of the principal's location. You should discuss the details and potential for enforceability with your lawyer. There is a perception among some that restrictive covenants are unenforceable and, as such, can be easily violated.

Similarly, the associate should not agree to a principal's selling price, even if it appears entirely equitable, without seeking an independent valuation (more than one is even better).

The timing of the buy-in optimally occurs around the 18-month mark. For the principal, who absorbs all the initial risk, this juncture is critical for protecting practice goodwill. If a buy-in isn't forthcoming, and the associate remains in the practice, he or she may eventually challenge ownership of the

practice's goodwill (particularly devastating for a principal nearing retirement). The 18-month mark is also important for the associate who, after working hard and diligently to contribute to the practice, may feel that the ultimate goal of at least some sort of practice ownership remains elusive.

Although sound principal/associate agreements map out the above details, many do not include provisions for the possibility that a principal and associate may fail to come to terms after the 18-month period, as planned in their initial contract. This should be dealt with through "business arrangements," which constitute the second line of defense for the principal (the restrictive covenant being the first). In effect, a dollar value is assigned to patient charts and the cost of staff re-training. If the two parties cannot come together, the associate pays the principal a predetermined amount for each patient chart and staff member that he or she "takes" to another location. Because these business arrangement quantify value — in a way that is difficult for restrictive covenants to do — they add an extra layer of protection to principal/associate relationships.

This type of planning puts "all the cards on the table," reducing each party's risk — and the potential economic damage that could result from squabbling over chart "ownership." It also minimizes legal and ethical wrangling, which can only facilitate win-win situations for the principal, the associate and the profession as a whole. The time invested in principal/associate agreements is minute compared to the potential headaches of this relationship running awry. For more information on principal/associate relationships, see the March and April 1993 issues of the *Journal* (Economics of the Associate. Vol. 59, No. 3, pp. 239-241, 247; Compensating Associates. Vol. 59, No. 4, pp. 344-346).

Patient Treatment

Because dentists are bestowed by society with the power of self-regulation, there is an expectation — and it's a wholly reasonable one — that they will not abuse their

the patient's welfare must always be the dentist's first and foremost priority. As indicated in the principles of CDA's *Code of Ethics*, "The primary concern is the life and general health of the patient."

Although this dictum is straightforward and worthy, it is clear that the means for achieving it vary from dentist to dentist. You can imagine, or may have experienced, the philosophical gulf between dentists who view their primary role to be one of preventing oral disease and those who believe the cornerstone of their mandate is diagnosing and treating oral disease. Sandwiched between these two ends of the continuum, you'll find the bulk of the dentists — those who prevent, diagnose and treat.

But as you'll read in upcoming issues of the *Journal*, the present climate of patient treatment, which by nature is becoming more and more elective (preventive hygiene, cosmetic dentistry, etc.) poses particularly interesting ethical questions for the dental profession. ■

CDA MUSEUM

Donations requested



Memorabilia from CDA's 92-year history is now on display in antique cases in the library of the Canadian Dental Association headquarters in Ottawa.

As originally planned, the displays are changed on a regular basis to suitably depict different eras of our rich dental history. Donations of museum-quality dental artifacts are still being accepted and are very much appreciated. Particularly requested are larger items such as chairs, units, cabinets and X-ray machines, plus historical photos and records.

Also of interest to dental historians are the items highlighted in the column entitled, "What's It?," which appears monthly in the *CDA Journal*. This column elicits the help of readers in identifying some of the antique items presently on location in the museum.

For further information, contact Dr. Ralph Crawford at the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. (613) 523-1770 or call toll-free, 1-800-267-6354.



WARNER LAMBERT



Warner-Lambert Canada Inc. is pleased to announce its support of organized dentistry through the sponsorship of the CDA President's Dinner, held in conjunction with the Annual Meeting of the CDA Board of Governors and FDI Congress 1994.

Warner-Lambert, makers of Trident Gum and Original Listerine and Cool Mint Listerine Antiseptic Mouthwashes, extends its congratulations to the Canadian Dental Association as Canada hosts world dentistry in October, 1994.

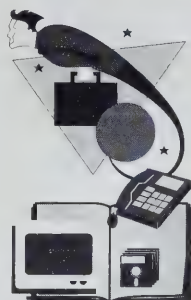


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The CDA Library — History, Service, Need

The CDA Library is much more than a repository of books, periodicals and archived material. Through its state-of-the-art computer systems, CDA members enjoy fast, efficient access to a wide range of services and information. Data available from the library has a wide variety of uses in such areas as clinical activities, practice management, and research activities.

CDA established the library in 1951. During the next 16 years, the library actively acquired journals and texts. In 1967, in honor of a \$50,000 bequest from an Ottawa orthodontist, it was formally named the Sydney Wood Bradley Memorial Library.

Because of Dr. Bradley's generosity, the next decade saw much continued activity for the library. However, the library's collection and services were dramatically reduced in 1976, when CDA moved its headquarters from Toronto to Ottawa. Another factor in the reduction was the opening of five new Canadian dental faculties — all with their own libraries.

In the early 1980s, CDA perceived that Canadian dentists needed a comprehensive national library and resource centre. In response, the association revitalized its Sydney Wood Bradley Memorial Library, and entered a new phase of journal and text acquisition. The wisdom of that decision was further strengthened in 1986 when Helen Langstaff, Dr. Bradley's daughter, bequeathed

\$1.6 million to CDA in support of the library. Today this trust is administered by the Dentistry Canada Fund, and the annual interest it earns is used for many facets of the library's operation including acquisitions, equipment purchase, and technological upgrades.

The library's mandate to provide information to assist the dental profession is derived from the CDA's mission statement: *The CDA is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.*

This ties in well with one of the objects of the Dentistry Canada Fund, which is: *To support and maintain the Sydney Wood Bradley Memorial Library as a source and repository for material and data for research into the conduct of the practice of dentistry.*

Today the CDA library benefits literally thousands of CDA members. Hundreds of requests are responded to quickly and efficiently every month, while particular care is paid to assisting those dentists who may not otherwise have access to many continuing education sources, and to helping dental students from all parts of the country. The library has become an efficient vehicle for collecting, organizing, and delivering a vast amount of information to those who need it most.

One of the library's most popular features is Medline,

which provides dentists with access to the largest repository of computerized dental information in the world, and includes the Index to Dental Literature (dating back to 1966) and the Index Medicus. In addition, abstracts are available for most articles, on line — an effective, time-saving option for the busy practitioner. The demand for the library's Medline service continues to grow. In 1982, 65 Medline searches were conducted each month. Now, just 12 years later, the number of monthly searches has jumped to 275.

In addition to Medline searches, the library responds daily to requests from members for more general information: Does CDA have guidelines on tooth bleaching?; Are there any dental seminars available in the United States in December?; Is there a listing of all North American dental programs?; How can I contact volunteer organizations for dental work in underdeveloped countries? — the range and number of questions are only limited by the number of people aware of the library's information service.

Others may not be aware that the library's ongoing automation program means that its collection of books, reports, journals and videos is now organized on a computer program that can be accessed quickly and easily by library staff, and will eventually be available on-line for dentists who subscribe to CDANet Plus.

In addition to researching subjects through a Medline search, the library can also access other library collections and request books and articles from them electronically. Due to its many computerized functions, the CDA library remains at the forefront of the information retrieval industry.

Despite the two large gifts it received from Dr. Bradley and Mrs. Langstaff, the library's continued growth and development has created a need for additional funds. At the same time, every year more and more dentists are taking advantage of the wonderful resources that the library has to offer.

In October, when the Dentistry Canada Fund's annual appeal letter arrives in your mail, consider adding to the legacy of Dr. Sydney Wood Bradley and Mrs. Helen Langstaff — your donation to DCF can be specifically directed to support the CDA Library and its programs, and you and your colleagues will reap the benefits of your tax deductible gift for years to come. For larger gifts, many individuals may prefer to use the DCF Planned Giving Program, which allows a wide variety of giving options. Either way, your donation will help to ensure and strengthen the future of the Sydney Wood Bradley Memorial Library.

To obtain further information about DCF, contact James Wegg, Manager DCF, at: (613) 731-0492. ■

PACKAGE LIBRARY FOR SEPTEMBER 1994

This month's Package Library is on tuberculosis. Members can obtain the package for just \$5 plus applicable taxes. To order yours, simply call the CDA Library at 1-800-267-6354, extension 223. At the same time, ask for a complete list of all our services. We'd be happy to tell you what we can do!

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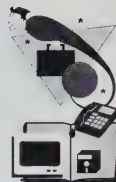
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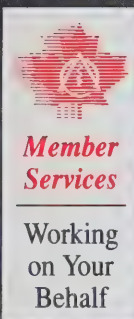
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*Dr. Richard Rayman
Willowdale, Ontario*



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BOOK REVIEWS

Color Atlas of Oral Disease: Clinical and Pathological Correlations, 2nd edition

Cawson, R.A., Binnie, W.H. and Eveson, J.W.

1993, Wolfe Publishing; an imprint of Mosby-Year Book Europe Limited, Hong Kong; 326 pages, 878 illustrations, \$202.00, ISBN: 1-56375-594-7

This is a large (30 x 25 cm) sumptuously-illustrated book on diseases of the mouth. The first edition was published in 1987. This revised edition has an additional author in Dr. W.H. Binnie, 25 per cent more text, and nearly 100 more illustrations.

Unusually for an atlas, this book has an extensive but concise text. The authors describe and discuss, quite excellently, an exhaustive list of the surprisingly large number of diseases that can and do affect the human mouth, including the rarer conditions. All the essential information is provided, despite the brevity and less discursive nature of the text (relative to what is found in most textbooks), and a list of references for further reading is given at the end of each chapter.

The illustrations include clinical photographs, photomicrographs with adjacent line drawings for explanatory purposes, radiographs, tables and occasional electron micrographs. Overall, the quality of reproduction is superb.

The juxtaposition of color clinical photographs and photomicrographs illustrating the disease process at the cellular level, often with adjacent explanatory line drawings, makes for quick comprehension. This book is an ideal quick reference that clinicians will find useful when patients present with oral conditions that are unfamiliar to them. Its value lies in both its text and in its illustrations.

The atlas is organized into 18 chapters on normal structures; developmental defects of teeth; dental caries; periodontal disease; cysts; odontogenic tumors; bone tumors; bone and temporomandibular joint diseases; major infections; diseases of nerves; muscles and connective tissues; stomatitis; hyperkeratotic

and pre-malignant lesions; salivary gland diseases; pigmented lesions; granulomatous lesions; blood vessel diseases and diseases of the hemopoietic and lymphoreticular systems. As a result of this approach, a number of diseases are discussed in several chapters. Lichen planus, for example, comes up in five — the major description is in the chapter on stomatitis, with short references occurring in the chapters on periodontal diseases, hyperkeratotic lesions, pigmentations and epithelial tumors. This could lead to some confusion for the reader, unlike the case in most textbooks, where all aspects of the disease would typically be covered in one place. However the configuration of atlases is always problematical, and there is no ideal arrangement.

While it is intended primarily for oral and general pathologists, the atlas would also be an admirable reference text for practising oral surgeons, periodontists, otolaryngologists and general dentists. It could also be used as a valuable instructional manual for postgraduate students.

In terms of its coverage of the subject and the quality of the illustrations, this text is outstanding.

Reviewed by:

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Esthetics of Anterior Fixed Prosthodontics

Gerard Chiche and Alain Pinault

1994, Quintessence Publishing Co. Inc., Singapore; 202 pages, color photos, \$98, ISBN: 0-86715-258-3

I must, at the outset, admit to a positive bias in reviewing this book. Recently, I was privileged to listen to Dr. Chiche present a full-day course on esthetic fixed prosthodontics, and I frankly hoped that his book, written in collaboration with well-known technician Alain Pinault, would be as well organized and relevant as his presentation. I was not disappointed.

While much has been published about esthetics, from the dentist's

standpoint, few books summarize the state of the art in esthetics with such clarity. The text is logically organized, beginning with three chapters on esthetic diagnosis and proceeding to sections on metal ceramic and all ceramic crowns.

The longest chapter — concerning communication between dentist and laboratory technician — is particularly valuable in suggesting practical solutions to many of the challenges in this critical area. Some practitioners may feel overwhelmed by both the complexity of the shade selection portion of this chapter, and the task of finding a technician who can create the desired restoration. Nevertheless, Chiche and Pinault have developed an organized, but not simple, approach to a difficult process.

The final three chapters focus on the often overlooked aspect of tissue management in terms of impressions, provisionals and periodontal management of esthetic defects. As expected with Quintessence books, this text is lavishly and beautifully illustrated. It is also exceedingly well referenced, noting relevant historic and current publications at the end of each chapter.

As a reference for advanced clinicians or technicians with a special interest in producing optimum anterior esthetics, or for students seeking an overview of the basic principles of esthetics, this text is highly recommended.

Reviewed by:

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Retention and Stability in Orthodontics

Edited by Nanda, R., and Burstone, C.J.

1993, W.B. Saunders, Philadelphia, \$87, ISBN: 0-7216-4342-6

During the winter of 1990, 16 distinguished orthodontic clinicians met for a state-of-the-art symposium to discuss the current knowledge of orthodontic retention and stability. The stated goal was to consider the

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effect that improved orthodontic treatment modalities can have on both short-term and long-term stability of the treated case.

In the prologue chapter, the categories for relapse are divided into "intrinsic forces," including growth and maturation, as well as the aging of the dentition, and "extrinsic forces" resulting from the inherent instability of the occlusion produced by orthodontic therapy. It was recognized that intrinsic forces take many years to manifest their latent potential, whereas relapse due to extrinsic forces often occurs within a short time of retention appliance discontinuance.

Edward Angle, writing in 1900, noted the tendency for relapse, stating: "The time of retention varies according to the age of the patient, occlusion gained, causes overcome, tooth movements accomplished, length of cusps, health of the tissue, etc., from a few days, to a year or two years, or often longer." Almost 100 years later, these same tenets apply and support the adage that the more things change, the more they remain the same.

Although clinical trials are now being conducted, something that was sadly lacking in the past, it will be many years before they yield significant data to help practitioners avoid the relapse phenomenon. This text's editors state that the currently popular term of *physiological adjustment* is multifactorial, and should be explained to the patient or parent at the initial consult appointment, not at the end of active treatment.

The book provides an excellent collection of current retention and

stability knowledge, as it existed in the late 1980s. Its content ranges from some philosophical concepts, through anecdotal clinical observations, to 35-year retrospective treatment assessments.

This is a very worthwhile addition to the library of the serious orthodontic practitioner — not as a unread book, but as one that should be well thumbed.

The profession looks forward with much anticipation to the sequel of this book, and the definitive word on *physiological adjustments*.

Reviewed by

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Osseointegrated Implant — A Manual

The Department of Oral Implantology, the Nippon Dental University, Tokyo, Japan

1994, Ishiyaku EuroAmerica Inc., 159 pages, 537 illustrations (498 in color), \$204, ISBN: 1-56386-014-7

Originally published in Japanese in 1989, this manual is intended for surgical, prosthodontic and labora-

tory teams involved in providing implant-supported reconstructions.

The text begins with a forward by professor P.I. Brånemark and a recommendation by professor U. Lekholm. It is illustrated with 498 excellent step-by-step photographs, each of which is accompanied by a detailed description.

A list of 12 references (five in Japanese) appears at the end of the manual. There is no index, but a comprehensive table of contents compensates for this.

The manual describes a standard complete arch reconstruction as well as the reconstruction of a partially-edentulous jaw. Both procedures are illustrated using a patient and a model jaw.

Unfortunately, the manual only deals with the Nobelpharma, Brånemark system, and does not cover the single tooth, CeraOne, or the Esthetic Cone abutments. It cannot, therefore, be described as a complete manual of the osseointegrated implant.

This text may be recommended — as an introductory color manual — to surgeons, dentists or technicians taking the basic Nobelpharma implant course. However, it doesn't contain enough information, nor is it current enough, for those with experience in dental implants who are looking for a comprehensive manual on the osseointegrated implant.

Reviewed by:

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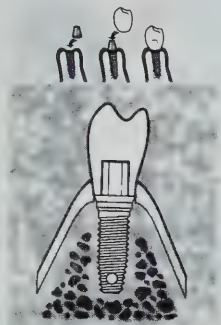
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IMPLANTS



The Implant Supported Mandibular Bar Overdenture: Diagnosis and Treatment Planning

Jack N. Lipkin, B.Sc., DMD

Marshall Hoffer, DMD

This paper provides a framework of concepts and ideas to facilitate the evaluation of prospective implant patients. The information presented should also help to promote successful planning and co-ordination of treatment for the bar overdenture patient.

Preliminary Evaluation

The evaluation of a patient as a suitable candidate for implants should follow the same basic format as the standard patient evaluation, although some areas require additional emphasis and attention. In particular, the patient's medical history may reveal a number of conditions that could complicate or even contra-indicate implant therapy. These include:

- Bleeding disorders and some of the infrequent bone disorders, such as Paget's disease;
- A history of radiation therapy in the maxilla or mandible region. Patients in this category must be evaluated by the implant surgeon in consultation with the appropriate medical specialists;
- Diabetes. Patients suffering from a mild form of diabetes may experience delayed healing and increased susceptibility to infection. Patients with uncontrolled diabetes should not be considered for implant therapy;
- Epilepsy that presents with more than one grand mal seizure per month;

- Smoking. Reports in the dental literature reveal that implant failure rates are twice as high in smokers as in non-smokers.

In most cases, it is the severity of the condition and the patient's residual ability to tolerate treatment that determine whether or not implant therapy is contraindicated.

In addition, there are a host of systemic medical conditions, including steroid therapy, hyperthyroidism, and adrenal gland dysfunction, that can cause complications during the postoperative healing stage, and may contribute to implant failure. These factors must also be assessed by the implant surgeon.

Psychological Status

Even if a patient is found to be a suitable candidate for implant therapy, he or she must be apprised of two additional factors before being considered for treatment:

A) Patients receiving implant therapy for a mandibular bar overdenture may potentially experience approximately four to six months of discomfort and diminished function before any benefits become apparent. They are frequently required to go without their removable prosthesis for significant periods of time following initial surgery.

B) Implant failures can occur at any time, despite everyone's best efforts. Current success rates in the anterior mandible are very high.

However, even here, implant fixtures can and do fail.

If the patient cannot come to terms with the possibility of failure, or four to six months of potential discomfort and inconvenience, then he or she is not a suitable candidate for implant therapy.

Dental History

Before selecting the most suitable type of implant restoration, the practitioner should review and be guided by the patient's previous dental history. It is also vital to evaluate the patient's chief complaint, as it may have an equal bearing on treatment outcome. For example, the treatment plan recommended to the patient desiring a more secure lower denture will be quite different from the one proposed to the patient seeking a fixed and rigid appliance. But in all cases, if the possible treatment options won't satisfy the patient's most important concern, the practitioner must clearly explain what the likely outcome of treatment will be, as well as the potential risks, and the patient must agree that the compromise is acceptable.

Treatment Planning Determinants

1. Changes in Oral Structures in Edentulism

Over time, the edentulous mandible loses height and width of bone. As this occurs, the width of attached gingiva narrows consider-

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ably, the tongue increases in size and activity, and the buccinator and mylohyoid muscles become more active. In addition, the genial tubercles become more prominent and in the severely resorbed mandible, they can often be superior to the height of the ridge crest.

With successive denture treatments, it is common for the vertical dimension of occlusion to decrease as bone resorbs. This promotes an increased tendency toward a skeletal Class III relationship.

2. Posterior Ridge Anatomy

An important factor to evaluate, and one that is often overlooked, is the anatomy of the posterior ridge. So much attention is paid to the anterior ridge crest and its suitability for implants, that the anatomy, ridge shape, and tissue condition of the posterior ridges are not duly considered.

Posteriorly, poor ridge height, inadequate attached gingiva, and compromised ridge shape cause increased horizontal movement of the prosthesis. This increases the lateral forces that are brought to bear on the anterior implants, and will affect bar and prosthesis design.

3. Occlusal Forces

In the natural dentition, occlusal forces in the molar region are in the range of 150 to 250 psi,¹ although parafunctional habits can increase these occlusal forces to as high as 900 psi. However, in the edentulous patient, the average occlusal force drops to just 50 psi. Once an implant-supported prosthesis is in place, maximum occlusal forces may increase as much as 300 per cent compared with pretreatment values.

Edentulous patients that are predisposed to clenching and bruxing may be given the necessary "tools" to begin parafunctional habits once the implant bar is secured in place.

4. Quality, Location and Quantity of Bone

The minimum buccal-lingual thickness of osseous tissue required to successfully place an implant is 5.0 mm (**Fig. 1**). The anterior ridge crest of the mandible often resorbs to a peak superiorly, leaving an

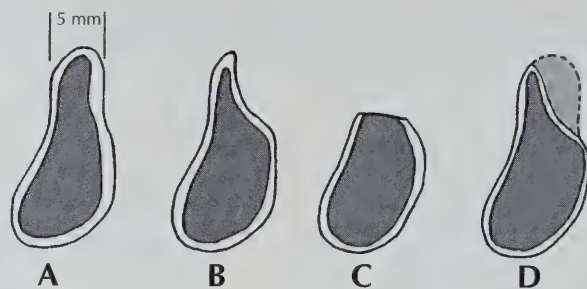


Fig. 1: The quality, location and quantity of bone present are crucial to the success of the implant restoration.

A: The mandible should provide a 5.0 mm width of bone at the ridge crest.

B: A mandible that provides inadequate width for implant placement at the ridge crest.

C: Excising the crestal bone to provide a minimum mandible width of 5.0 mm results in a significant decrease in the height of the ridge crest.

D: Augmentation of the ridge crest requires additional surgical procedures.

inappropriate ridge morphology for implant placement.

In order to achieve a 5.0 mm "flat" base, either the anterior ridge crest peak must be removed (which effectively lowers the level at which the implants are placed), or a bone graft must be considered.

Prior to selecting implant sites, the osseous tissues should be evaluated with appropriate radiographic studies such as panoramic X-rays, tomograms, or a CAT scan.

5. Implant Size

The greater the surface area of the implant-bone system, the less concentrated the force transmitted to the crest of bone at the implant interface. Similarly, the greater the surface area of the implant-bone system, the better the prognosis for the implant, all other factors being equal.

Using the formula $(2 \pi R) (H)$ to determine the surface area of a cylinder, it should be noted that:

A) For each 0.25 mm increase in diameter, the surface area of a cylinder increases by more than 10 per cent;

B) For each 3.0 mm increase in length (H), the surface area of a cylinder increases by more than 10 per cent.

It's also important to remember that, as a general rule of thumb, wider available bone in the edentulous area allows for:

A) Placement of a greater diameter implant;

B) Decreased stress to crestal bone;

C) A greater latitude in implant placement.

6. Implant Location

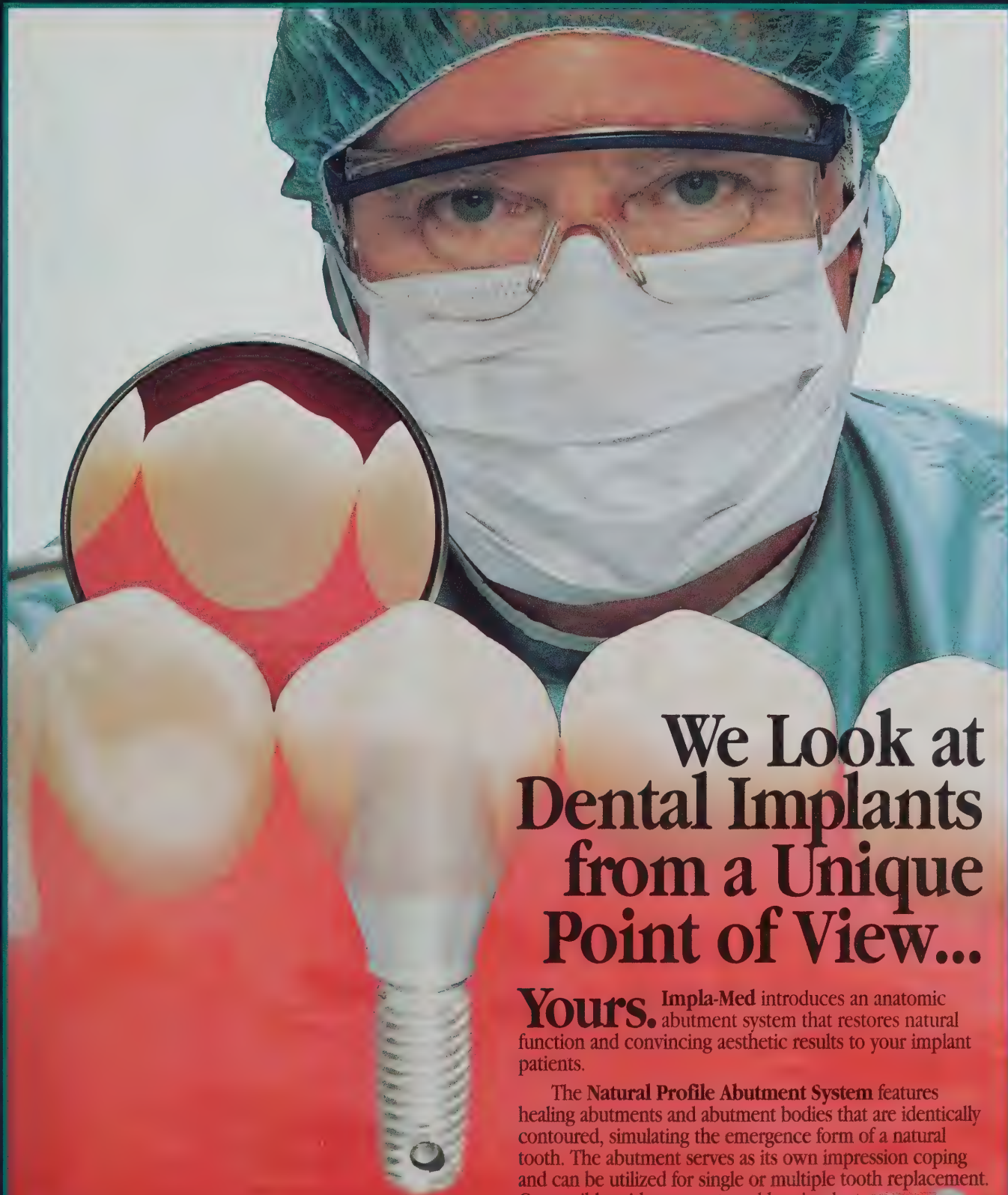
Ideally, occlusal forces should be directed along the long axis of the implants. The angle of the osseous ridge crest is therefore a key determinant of implant angulation. For example, in the posterior mandible, the combination of the resorption of the buccal plate of bone and the concavity of the submandibular fossa often lead to lingually-inclined implants.

Another factor to consider is the distance between an implant and any adjacent "landmark" (natural tooth or another implant), which should be not less than 2.0 mm.

7. Arch Configuration

While osseous support and gingival health are important factors in the design of the implant bar, during the pre-surgical phase, it is also vital to evaluate the shape of the arch.

Mandibular arch forms may be classified as tapered or square.¹ With tapered arch forms, the most posterior right and left implants in a four-implant treatment are often placed well around the "turn" of the arch, creating a "U" shaped design that is well suited to cantilevering. With a square arch, however, the four implants are usually placed in a relatively straight line. This "straight line" bar design is not well suited to cantilevering.



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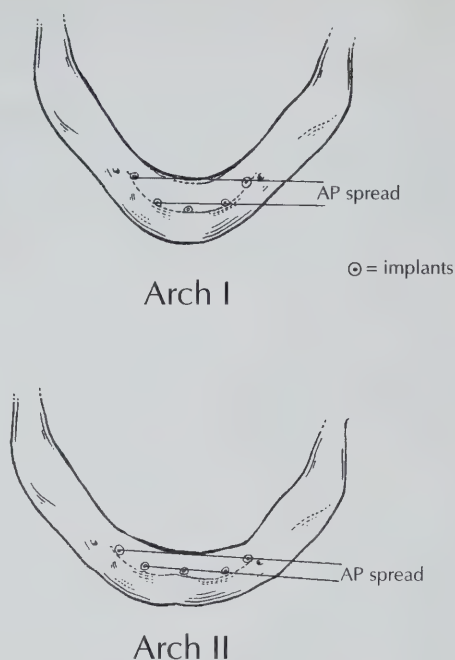


Fig. 2: The extent that a cantilever can extend beyond the distal implant can be related to the AP spread, which is determined by the shape of the arch. The cantilevering potential of Arch I is significantly greater than that of Arch II, based on the larger AP spread. (Reprinted with permission of Dr. Charles English.)

8. "Mapping" the Mandible

The anterior symphysis can be divided into five geographic sites. A point, 6.0 mm anterior to each mental foramen, determines the most posterior boundaries, right and left. Another possible implant location occurs at the midline. Two additional sites are chosen on each side of the midline, spaced equidistantly between the midline and the respective distal sites.

All five sites should be designated, regardless of the treatment options selected. It is important for the restorative dentist to determine the preferred treatment for his patient in advance.

9. Cantilevering

Several guidelines have been suggested as to how much a practitioner can cantilever from the most posterior implant on both sides of an implant-supported bar.

One method is to draw a line through the most anterior implant, and another through the two most posterior implants. The distance between the two lines can then be measured. A suggested maximum cantilever would be 1.5 times this

distance, which is referred to as the AP spread (**Fig. 2**).⁹

The number of implants, their respective lengths and locations, the quality of bone support, the posterior ridge anatomy, occlusal forces, and the opposing dentition are of greater importance in determining the appropriate cantilever than a suggested formula.

Treatment Planning

The implant surgeon and the restorative dentist — using radiographs, casts, diagnostic wax-ups, and diagnostic data — may now choose a potential implant width and length for each designated site. All of the previously mentioned factors will play an important role in planning the implant surgery, and ultimately the final prosthesis.

When all the diagnostic information has been assembled, a variety of available treatment options must be assessed:

1. Two-Implant Bar Overdenture

In the two-implant bar overdenture, an attachment is used to greatly enhance the retentive potential of what is essentially a tissue-supported prosthesis. This at-

tachment is fabricated as part of the implant-retained bar.

The procedure requires the practitioner to adhere to the basic principles of removable prosthodontics. The attachment and bar design selected must allow for movement of the denture or the implants will be subjected to excessive torquing forces during normal function.

If only two implants are placed, which are 13 mm long or longer, and they are in dense bone, they can be left as individual supporting units with little risk. However, if the two implants are 10 mm long or shorter, or the bone quality is compromised, then ideally:

- A) They should be splinted;
- B) They should be at least 10 mm apart (in order to allow room for a clip or fastening mechanism, i.e. Hader bar);
- C) They should be no further than 18 mm apart in order to limit bar flexure.

2. Three-Implant Bar Overdenture

The three-implant bar overdenture is still essentially a tissue-supported prosthesis with enhanced retention supplied by the attachment/bar complex (**Figs. 3a, 3b, 3c**).

There is more masticatory support available in the anterior area with this restoration, but again, all basic removable prosthodontic principles must be adhered to.

3. Four-Implant Bar Overdenture

At this level, the prosthesis begins to derive a larger part of its support and retention from the implant/bar complex, and the importance of tissue support decreases.

Depending on the length of the implants and the condition of the opposing arch, there can be a significant change from a balanced occlusal scheme to more of a cuspid guided occlusion. Also, the attachments selected for a four-implant bar overdenture can be more rigid, as the torquing forces generated by the prosthesis will be better tolerated.

When all of the critical factors are considered, including economics, it is clear that the ideal number

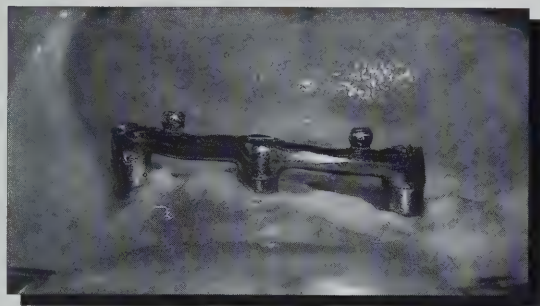


Fig. 3a: The labial view of a three-implant cast lower bar.



Fig. 3b: The occlusal view of the same three-implant cast lower bar.



Fig. 3c: The tissue surface of the lower overdenture.

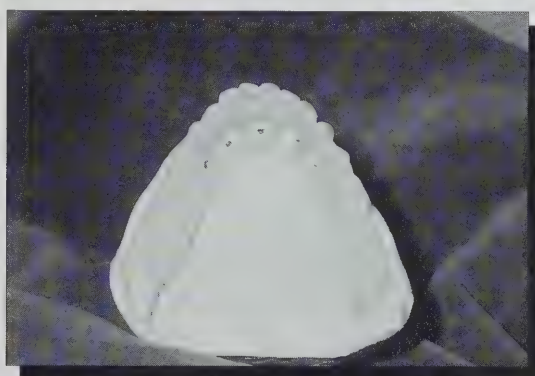


Fig. 4: A surgical template for a five-implant bar overdenture.

of implants in a bar overdenture is four. This number allows for some "insurance" in case one implant fails to integrate.

4. Five-Implant Bar Overdenture

At this level, a prosthesis can be fabricated that is completely implant supported and retained, if the AP spread of the implants is adequate.

The selection of attachments for the five-implant bar restoration can be as rigid as the patient can manage. It is important to keep the patient's physical capabilities in mind when designing the retentive aspects of the restoration, so as not to create a prosthesis that the patient is incapable of removing.

The decision to fabricate a bar overdenture over five implants, rather than a fixed detachable restoration, usually relates to the patients' chief complaint and the patients' ability to maintain proper oral hygiene. The fixed detachable

restoration requires more dexterity and dedication from the patient to maintain a high level of cleanliness, while the bar overdenture is much easier to clean.

In addition, the failure of a single implant fixture in a five-implant bar overdenture restoration usually can be serviced. In this case, the prosthesis is maintained at almost no perceptible decrease in comfort and stability to the patient.

With a fixed detachable restoration, the failure of a terminal abutment could require additional surgery to replace the lost fixture, or conversion of the restoration to a bar overdenture. Either alternative is costly, and can lead to patient dissatisfaction.

Summary

In selecting the treatment most appropriate to the patient, the practitioner should consider all of the factors mentioned in this paper, as well as the patient's economic status. A written treatment plan

should be provided to the patient, and a signed authorization for treatment should be obtained before treatment begins.

Clinical Procedures

Pre-Surgical Preparation

The existing dentures should be evaluated for esthetics, phonetics, vertical dimension and occlusal relationships.

If the existing lower prosthesis is acceptable, and no significant alterations in tooth positions are planned for the new prosthesis, the existing complete lower denture can be duplicated in clear acrylic. A surgical template of the design agreed on by the restoring dentist and the surgeon can then be prepared (Fig. 4).

In addition an accurate, well-extended impression of the lower arch should be obtained prior to the first surgery. The cast obtained from this impression will be used to fabricate the custom trays required



at the restorative and prosthetic phases of treatment. An inadequate impression at this stage can complicate the future procedures.

If the existing complete lower denture is not adequate, the restoring dentist should follow his or her normal protocol for the fabrication of a new denture:

- A) Preliminary impression
- B) Final impression
- C) Maxillo-mandibular records
- D) Articulator mounting
- E) Initial tooth try-in, in wax
- F) Final tooth try-in, in wax

When both the dentist and patient are satisfied with the denture set-up, the wax-up of the lower denture can be duplicated in clear acrylic and appropriate surgical templates can be fabricated.

All of the work performed to get to the wax try-in stage can be saved until after the implants are uncovered. Therapy can be continued, using the wax set-ups as a guide for the fabrication of the bar and as the basis for the final mandibular overdenture.

Failure to do adequate presurgical preparation can result in unfavorable implant placement, and a possible inability to complete the prosthetics in a manner satisfactory to the patient. The responsibility for providing the surgeon with proper templates lies with the restoring dentist, and concludes the preliminary phase of implant therapy. ■

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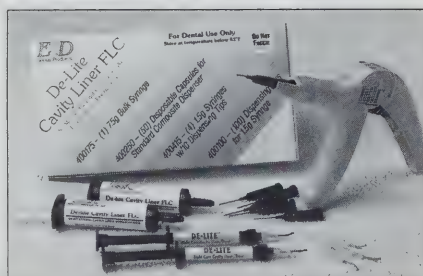
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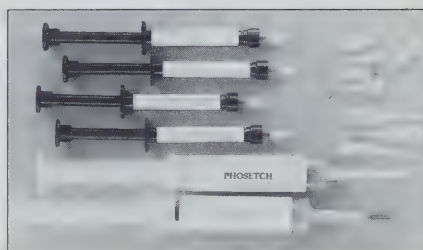
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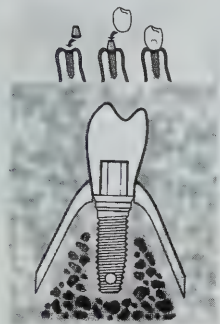
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IMPLANTS



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Introduction

Implant dentistry is a rapidly growing aspect of dental treatment. At present, the most widely-used dental implant systems are threaded endosseous screws such as the Brånemark (Nobelpharma) and Core-Vent designs. However, these designs have inherent disadvantages, including:

- Placement can be complicated and technique-sensitive, frequently requiring a specialist to place the implant;
- A need for excessive implant length to ensure adequate bone-implant contact after osseointegration;
- A low tolerance to micromovement during initial healing, thereby necessitating the engagement of cortical bone apically;
- A long initial healing period of four to six months; and;
- A two-dimensional mechanical interlocking with the bone following osseointegration, providing minimal resistance to torque.

Furthermore, the sensitive technique and expensive components required to place and restore these implants make this procedure somewhat costly for the patient, limiting its feasibility for a number of patients.

Clearly, a dental implant system is needed that is easier to place, less invasive and more biologically compliant, and less costly to the patient. It should also be usable,

with a high degree of reliability, by a wider group of practitioners.

A new dental implant system has been developed at the University of Toronto that shows considerable promise in this regard. The Endopore Dental Implant System features a biologically-compliant design, ease of placement and simplified, less costly prosthetic components. This article will discuss the Endopore implant and provide some examples of its clinical applications.

Implant Design

The Endopore implant is a partially porous-coated titanium implant with a truncated-conical shape and a 1.5 mm tall external hex. The standard implant is 4.1 mm in diameter at its coronal aspect, and is available in lengths of 7.0, 9.0, and 12.0 mm (**Fig. 1**). There is also a narrow version, which is 3.5 mm in diameter at its coronal aspect and 9.0 mm in length.

The design of the Endopore implant is unique in several ways:

- 1) The implant's porous surface coating is in contact with bone;
- 2) The smooth surface on the coronal collar of the implant is in contact with soft tissues; and
- 3) The implant has a tapered, truncated-conical shape.

There are also distinct advantages in terms of surgical technique and implant placement:

- 1) A simple surgical approach requiring only three burs and a mini-



Fig. 1: Mini-implant, 7.0, 9.0, and 12.0 mm Endopore implants. The smooth polished collar is available in heights of 1.0 and 2.0 mm.

num of specialized instruments is used;

- 2) The implant's self-seating design ensures a tight initial fit;
- 3) Initial healing periods are shorter; 10 weeks in the anterior mandible; 16 weeks in the maxilla and posterior mandible;
- 4) Three-dimensional interlocking with bone provides greater resistance to torquing forces;
- 5) Shorter implant lengths, i.e. 7.0, 9.0, and 12.0 mm can be used as apical cortical bone does not need to be engaged by the implant. The implant has two different surfaces, consisting of a smooth polished collar on the coronal circumference and a three-dimensional porous coating over the remaining aspects of the conical implant. Each surface has been carefully designed to be biologically compliant with the tissues that are adjacent to that surface.

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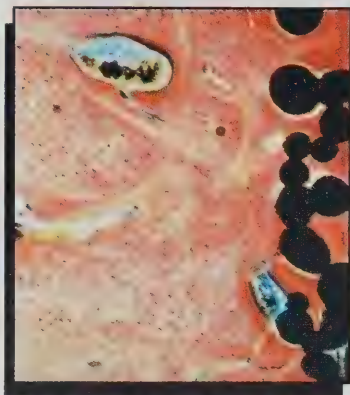


Fig. 2: Histologic section showing ingrowth of bone into porous surface coating (courtesy Innova Corp).

The smooth polished collar is available in heights of 1.0 or 2.0 mm, and is designed to prevent excessive plaque accumulation as well as to accommodate clinical situations where thin bone would otherwise result in exposure of the porous coat. This allows for clinical situations in which a lack of bone at one aspect of the implant prevents it from being totally submerged within bone. Clinical trials have demonstrated that no further bone loss occurs if the porous coat is not totally submerged within bone at second stage surgery. In fact, there is radiographic evidence of bone generation into the previously-exposed porous coat over time.¹

The surface porous coat of the Endopore implant is created by high-temperature sintering under vacuum with spherical beads of titanium alloy to produce a three-dimensional interconnected surface porosity. The pore size in this multilayered surface coat ranges from 50 to 200 μm , and has been shown to favor faster bone formation during initial healing than threaded implants.² It allows for bone formation within the porous coat, however, even in the presence of micromovement during the healing phase³ (Fig. 2).

Animal studies comparing the Endopore implant with a threaded implant similar to the Brånemark design demonstrated an increased surface area of osseointegration using the Endopore system, and indicated that it allows the successful placement of shorter-length implants to support functional fixed



Figs. 3a & b: Round bur, pilot drill, final drill, trial fit guage, 9.0 mm implant with 2.0 mm smooth collar and attached cover screw.



prostheses.⁴ Therefore, the Endopore implant can be used in patients who have previously been denied other dental implants due to a lack of bone or the proximity of vital structures.

The Endopore implant may also be more resistant to the stresses of occlusion. The three-dimensional nature of the ingrowth of bone into the surface porous coat contributes to a greater shear strength and greater resistance to torque.

Typically, the threaded, cylindrically-shaped implants of Brånemark design demonstrate 1.0 mm of crestal bone loss within their first year of function, and approximately 0.2 mm of loss per year thereafter.^{5,6} Animal studies have demonstrated some crestal bone loss for threaded, right cylindrical implants, but no such bone loss for fully porous-coated implants of a truncated-conical design.⁷ A clinical trial of the Endopore implant demonstrated that while the greatest bone remodelling (mean loss 0.44 mm) occurred during the first year of function, some further remodelling (mean loss 0.14 mm) occurred between the first and second year (mean loss 0.17 mm) and the 2nd and 3rd year (mean loss 0.13 mm), but did not proceed beyond that time.^{1,2} This remodelling of the alveolar crest did not extend beyond the junction of the machined surface of the smooth collar and the porous-coated surface of the implant.

The truncated-conical shape may also help to distribute the occlusal forces more evenly, and al-

lows for more leeway during implant placement adjacent to natural teeth, vital anatomic structures, and other dental implants, or into areas of narrow bone. Furthermore, this shape allows the implant to self-seat while being tapped into place, ensuring a tight initial fit into the prepared site.

Implant Placement

The design of the Endopore implant burs and the implant itself allow for a much simpler and quicker surgical procedure than other implant systems. The preparation of the implant site requires only three steps with the use of three burs (Figs. 3a & b). A round bur is used initially to perforate the bone cortex. An internally-irrigated pilot drill is then used for the initial preparation of the site, at approximately 1,000 rpm. The third and final bur is internally irrigated as well, and has the same truncated-cone shape as the implant. It is used at approximately 700 rpm for final preparation of the site. The bur's truncated shape allows it to be placed to the precise final length of the implant, reducing the risk of overpreparation and damage to the vital structures apical to the site. A smooth-surfaced trial fit gauge, which duplicates the final implant in size and shape, is then placed into the surgical site to predetermine the final seating of the implant and to check whether any further site preparation is required. The implant, with its surgical cover screw already attached, is then placed into the site and tapped into



Fig. 4: Three-year post-op of overdenture abutments on 7.0 and 9.0 mm long implants.



Fig. 5: Cylindrical receptacles lined with medium-bodied silicone impression material retain overdenture onto abutments.



Fig. 6: Fixed PBM bridge cemented onto 15 degree, angled abutment with temporary cement and onto straight abutment with permanent cement.

its fully-seated position. The total process, from the initial perforation of the cortical plate to the final seating of the implant, can be readily completed in under three minutes.

Implant Exposure

Care should be taken during the surgical exposure of the implant to ensure that a band of keratinized gingiva will remain around the implant abutment once healing has occurred. Although studies have demonstrated that alveolar mucosa around implant abutments is adequate for long-term implant maintenance,⁷ a band of keratinized tissue is usually necessary for patient comfort and to facilitate good home care. During implant exposure, the surgical cover screws are removed and replaced with healing abutments. These healing abutments are available in diameters of 4.1 and 5.4 mm for the regular Endopore implant, and in a diameter of 4.7 mm for the narrow Endopore implant.

The 5.4 mm diameter healing abutment allows for the establishment of an esthetic emergence profile in the final crown, whereas the more narrow healing abutment is appropriate in situations of minimal interdental or inter-implant dimension.

Clinical Trials

The initial clinical trial involved the placement of 156 implants in 52 patients.⁸ Each patient had three Endopore dental implants, ranging from 7.0 - 10.0 mm in length, placed in the mandibular anterior.

Ten weeks later, the implants were exposed to allow for the placement of overdenture abutments. The final mandibular overdenture was inserted on the free-standing abutments at approximately 14 weeks (Figs. 4 & 5).

Retention of the overdenture was provided with a lining of medium-bodied silicone impression material, that was a minimum of 1.5 mm in width, placed within relief-chambers cut into the underside of the denture at sites corresponding to the locations of the abutments. This initial clinical trial is now in its third and fourth year, post-function, and the results indicate a 95 per cent success rate (eight of the 156 inserts failed), no detectible mobility of the implants, no pain suggestive of implant failure, and minimal crestal bone loss of 0.44 mm in the first year, 0.17 mm in the 1st - 2nd year and 0.13 mm in the 2nd - 3rd year.⁹ This bone loss predictably occurred to the level of the junction between the smooth machined collar and the porous coat of the implant. There was no bone loss beyond the porous coat. In fact, measurements of bone at the three- to four-year period demonstrated a mean value increase of 0.07 mm.

Presently, there are ongoing clinical trials in the United States, where a multi-centre study is now in its second year, and at the University of Toronto. These studies are examining the effectiveness of the Endopore system for fixed restorations in partially-edentulous sites in the maxilla. There have been no adverse results nor evidence of implant failure under these conditions.

Restoration Of the Implant

a) Overdenture

The technique for fabricating an overdenture supported by Endopore implants has been designed to be simple and cost-effective. There are no bar-clip or ball-ring attachments and, providing it's adequate, the existing denture can be used as the final prosthesis. The patient can benefit from these cost savings, as the denture is adequately retained with silicone.

At the second-stage exposure appointment, healing abutments are placed and allowed to remain for a minimum of two weeks to allow for soft tissue healing. During this time, the existing denture is relined with soft-tissue reline material. Subsequently, overdenture abutments of 6.5, 8.5 or 11 mm in length are screwed into the implants.

If the existing denture is to be used as the final prosthesis, it can be modified by creating cylindrical receptacles in its underside to accommodate the overdenture abutments. These receptacles should have undercuts and be large enough to accommodate a minimum 1.5 mm thickness of impression material around the abutments. This is to prevent premature tearing of the impression material.

Medium-bodied silicone impression material is then placed into the receptacles, and the denture is seated over the abutments. If more retention is required, heavy-bodied material can be added to the mix.

When a new denture is required, the final denture impression uses implant transfer copings and implant analogues, and the place-



Fig. 7: UMA abutments on 9.0 mm Endopore implants to support fixed/retrievable prosthesis.



Fig. 8: Fixed/retrievable lower prosthesis screw-retained onto UMA abutments.



Fig. 9: Endopore implants placed in both arches to support fixed/retrievable reconstruction.

ment of the abutments is done in the laboratory during the fabrication of the prosthesis.

b) Single Tooth Crown and Fixed PBM Bridges

The Endopore system's prosthetic components have all been designed to allow simple restoration of the implant case, in a manner very similar to standard crown and bridge techniques. The abutments should not be placed until at least two weeks following the second-stage surgery to expose the implants. All abutments are screw-retained into the implant, and allow for a cement-retained prosthesis over the abutment. This cemented prosthesis can be retained with temporary cement or permanent resin cement, provided that access holes are present to allow for retrievability. The straight abutments are available in lengths of 7.0 mm and 9.0 mm and there are also 15 degree and 25 degree angled abutments (**Fig. 6**). Finally, a UCLA-type of custom abutment can be cast from a plastic pattern specific to the Endopore implant. Either a direct or indirect technique can be used to choose and modify the abutments.

Direct Technique:

In the direct technique, the abutments are selected and modified at chairside. Should an angled abutment be anticipated, angled trial-fit gauges are available to predetermine which angled abutment to order. Initial placement of the abutment into the implant will indicate if any gross occlusal reduction is required. Grooves cut into the side of the abutment help the practitioner to determine the amount of reduction required. Reduction of the abutment is done outside of the mouth using a high-speed hand-

piece and water irrigation or a grinding stone. Replacing the shortened abutment into the implant will indicate whether any further modification is required. If some minor correction is necessary to improve the path of insertion of the final prosthesis, this can be done in the mouth using a high-speed fissure bur with copious water irrigation.

Following all modifications, the retention screw is cinched tight using a torque wrench or TorqueControl handpiece set at approximately 30 Ncm torque. A final impression can be made using retraction cord, if required, with standard crown and bridge techniques. The laboratory should place access holes at the site of the retention screw. If this is not possible for cosmetic reasons, the final prosthesis should be retained over the abutment, which does not have an access hole in the corresponding superstructure, with temporary cement such as Tempbond or Dycal.

Indirect Technique:

The most common method of restoring implants uses an indirect technique, whereby implant transfer copings and implant analogues are used during a silicone impression to transfer the exact position of the external hex onto the master cast. In addition to dental stone, silicone is used during the pour-up to duplicate the soft tissues immediately adjacent to the implant. Subsequently, the abutments can be selected and modified in the laboratory. Where angled abutments are required, abutment templates are available to help determine which angle is most appropriate. If a custom abutment needs to be fabricated, a plastic pattern can be used to cast a suit-

able UCLA-type hexed abutment, over which a PBM restoration is made. Following the modification or fabrication of the abutments, a transitional prosthesis can be fabricated on the master cast in such a way that there is no occlusion in lateral function and minimal or no occlusion in centric. On insertion of the abutments in the mouth, a final impression is taken and the transitional prosthesis is adjusted to ensure that there is occlusal clearance in centric and lateral excursions.

The transitional prosthesis is worn for a minimum of two weeks prior to the insertion of the final prosthesis. One of the advantages of the Endopore system is the shortened treatment time from implant placement to insertion of the final prosthesis. Ongoing clinical trials in the United States (now entering their third year) and at the University of Toronto indicate that the final prosthesis can be inserted in the maxilla five months after implant placement. In the mandible, insertion can be completed 3.5 to four months after implant placement.

Fixed/Retrievable Prosthesis

The Endopore system can also be used to restore a full or partial arch with a screw-retained fixed/retrievable prosthesis (**Figs. 7, 8, 9**). Straight abutments, similar to those used for Brånemark implants, are available in lengths from 3.5 mm to 8.5 mm and have a coronal diameter of 3.85 mm. These abutments are compatible with the UMA system supplied by a U.S. manufacturer of prosthetic components for a variety of implant systems.

Summary

The Endopore implant system is a new dental implant system that is distinctly different from other implant systems presently available. Its unique design allows for ease of placement, use of shorter implants, three-dimensional ingrowth of bone (and thus greater resistance to torque), and a faster healing period. Its truncated-conical design allows for better distribution of stress and more leeway for error when it is placed adjacent to vital structures or in narrow regions of bone.

The prosthetic components have been deliberately designed to be simple and cost-effective, yet provide all the variety that is required to restore any clinical situation. For an overdenture, the unique abutment and prosthetic technique allows for a cost-effective method of providing stability to an existing or newly-fabricated full denture. For fixed prosthetics, the prosthetic components have been designed to allow the use of straight-forward crown and bridge techniques, with a minimal number of additional laboratory parts or costs required to restore the case. Furthermore, a full arch can be restored with a screw-retained fixed/retrievable restoration, using the new UMA abutments.

The surgical and prosthetic techniques required by the Endopore

system are simple and inexpensive, and could be managed by a general dentist with a good knowledge of sterile surgical technique. Multicentre trials by private practitioners in Canada and the United States indicate that implant treatment by a general practitioner using the Endopore system can be predictably and reliably successful. Presently, clinical trials are ongoing in both the United States and at the University of Toronto, using the Endopore system to place fixed restorations in both upper and lower arches. ■

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FDI
1994

82ND WORLD DENTAL CONGRESS ♦ VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE

Communications — Keeping You Informed



The 82nd World Dental Congress is almost here! The Organizing Committee and staff have been working hard to publicize this convention. By now you have received many publications from us. From the preliminary program together with the monthly updates in the *CDA Journal* I'm sure every dentist in Canada knows about the FDI 1994 meet-

ing in Vancouver. All of our efforts have gone into producing the largest dental convention ever in Canada.

For those of you who haven't registered yet, we simply must convince you to attend this meeting. There is still time to register — you can register on-site. The Organizing Committee will be ready to register you and assist you in finding accommodations until the very last minute. Here are a few more things we are doing to make your convention worthwhile and convenient:

As many are interested in continuing education credits at this meeting, we have included in your on-site convention kits, a form to record and verify attendance at the scientific sessions. At the beginning and midway through each lecture, a three-digit verification number will be announced by the chairperson. Participants will be required to note this number in the appropriate column. It is the full responsibility of the participants to maintain all necessary records required by their licensing boards or associations. Course code and number of credits for each lecture can be found in the final program book.

On-site at the FDI '94 meeting we will be producing a Daily Bulletin for three consecutive days: Tuesday, October 4, Wednesday, October 5 and Thursday, October 6. This

Daily Bulletin will be a 12-page up-to-the-minute news publication that will inform participants on the meetings' events as well as provide additional material on contemporary interests and topics in the dental profession. Not only that, but last minute changes to the scientific program and any other events will be publicized daily. So be sure to look for the Daily Bulletin and pick up your own copy.

Lastly, the FDI 1994 final program book has been put together and will be mailed out during the month of September to all US and Canadian registered participants. This book is your complete guide to knowing what is happening between October 2nd and 8th, where it is happening and how to get there. The final program book has also been translated into French, German and Spanish. If you would like a copy of the program book in one of these other languages you will be able to pick up a copy in the registration area on the Cruise Ship Level of the Vancouver Trade & Convention Centre.

We don't want anyone to be disappointed. This is a dental meeting you cannot miss — the FDI has not been in Canada since 1977. Don't miss out on a meeting that occurs in your country once a generation! We are looking forward to seeing you in Vancouver this October.

Marcia Boyd, D.D.S., M.A.
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Scientific Program



Abraham-Inpijn

Friday, October 7

Symposium On Medical Emergencies

Is Trouble Coming?

artin Addy

Tuesday, October 4

Quality Assurance In Patient Care,

Choosing Products And Recommending Procedures

erbert I. Bader

Thursday, October 6

Hand And Powered Root Instrumentation:

The Heart And Soul Of Periodontal Therapy

Friday, October 7

Root Planing And Scaling

rawford Bain

Thursday, October 6

Symposium On Guided Tissue Regeneration

Gingivitis – Why Should We Care?

abil J. Barakat

Friday, October 7

Multidisciplinary Approach In Implantology

ita Bauer

Tuesday, October 4

Techniques For Standardized Photography In Dentistry

uriel J. Bebeau

Tuesday, October 4

Ethics And Professionalism In A Revolutionary Age

radley Beiswanger

Friday, October 7

Symposium On Oral Research

Toothbrush Design And End-rounding Safety

ruce Blasberg

Thursday, October 6

Canadian Academy Of Oral Medicine Program

Orafacial Pain: Management Of Difficult Facial Pain Problems

Temporomandibular Disorders

lan Boghosian

Tuesday, October 4

Dental Materials For Dental Assistants

Pierre Boudrias

Wednesday, October 5

Temporary Fixed Partial Denture Restoration

Wednesday, October 5

Esthetic And Functional Management

With Implant-Supported Protheses

Hendrik Simon Brand

Thursday, October 6

Mechanism And Measurement Of The Cardiovascular And

Neuroendocrine Responses During Stress Induced By Different

Types Of Dental Treatment

Ralph Brooke

Thursday, October 6

Canadian Academy Of Oral Medicine Program

Orafacial Pain: Management Of Difficult Facial Pain Problems

Statistical Overview And Recent Theories Of Aetiology

Sherry Burns

Tuesday, October 4

What's Old ... What's New ... What's Tried ... What's True

New Instruments For Dental Professionals

Sherry Burns**Nancy Knispel**

Tuesday, October 4; Wednesday, October 5 & Friday, October 7

Isn't It About Time To Get On The Cutting Edge?? The Care,

Maintenance And Sharpening Of Periodontal Instruments

Wednesday, October 5 & Thursday, October 6

How To Choose And How To Use The Newest Curettes –

Periodontal Instrumentation Workshop

Kenneth Burrell

Tuesday, October 4

Role Of ADA Product Evaluation Programs

Pierre Colombet

Tuesday, October 4

Assuring Quality Of Dental Health By

Obtaining Equivalency Of Dental Diplomas

Jennifer Côté

Thursday, October 6

Guided Tissue Regeneration

Scientific Program

James A. Cottone

Friday, October 7
Infection Control In Dentistry: 1994

Jennifer M. De St-Georges

Wednesday, October 5
Symposium On Practice Management
Involving Your Staff In Patient Communication ...
The Key To Practice Success

Thursday, October 6
Creating A Patient Centered Practice By
Developing A Solid Patient-Practice Relationship

Ted DeVries

Wednesday, October 5 & Thursday, October 6
Computers – Up Close And Personal

Dragoslav Djukanovic

Friday, October 7
Differential Diagnosis Of Oral Lesions In Children

Terry Donovan

Monday, October 3
Update On Esthetic Restorative Dentistry

Wednesday, October 5
Porcelain Veneering Made Easy

James R. Dunn

Thursday, October 6
Aesthetic Dentistry

Friday, October 7
Aesthetic Dentistry: Bonding With
Composites And Ceramics

Joel Epstein

Wednesday, October 5
Symposium On Current Topics In The Diagnosis
And Treatment Of Mucous Membrane Diseases
The Management Of Oral Cancer Patients

Thursday, October 6
Canadian Academy Of Oral Medicine Program
Oral Facial Pain: Management Of Difficult
Facial Pain Problems
Atypical Facial Pain

John Featherstone

Friday, October 7
Symposium On Oral Research
Caries Risk Assessment

Ronald A. Feinman
Ami Smidt

Sunday, October 2
Esthetic Restorative Procedures, How, When And Why

Ronald A. Feinman

Wednesday, October 5
Bleaching And Porcelain Laminates
The Natural Combination

Bob Forest

Wednesday, October 5
This New Economy, Where Are We Going
With It, How Are We Going To Grow With It?

Abdul Gaffar

Wednesday, October 5
Symposium On Recent Advances
In Dental Calculus Formation/Prevention
Calculus Prevention Agents

Michael Goldfogel
Allen Kincheloe

Thursday, October 6
Esthetic Update 1994

Friday, October 7
A Technique And Management Approach
To Restorative And Esthetic Dentistry

Raymond S. Greenfeld

Tuesday, October 4
Acute Dental Emergencies

James Grisdale

Tuesday, October 4
Root Planing And Scaling

Miriam Grushka

Thursday, October 6
Canadian Academy Of Oral Medicine Program
Oral Facial Pain: Management Of Difficult
Facial Pain Problems
Burning Mouth Syndrome

Scientific Program



Walter Hailey

Wednesday, October 5
The Missing Link In Dentistry

**Jayne Halstrom
Ian Lowe**

Friday, October 7
*The Success Of Oral Appliances In The
Treatment Of Sleep Apnea And Snoring*

Orsten Jemt

Wednesday, October 5 (Lecture) & Friday, October 7 (Hands-on)
*Recent Prosthetic Advances In Osseointegration
Ad Modem Branemark*

Chris Johnson

Tuesday, October 4
You Don't Need Nitrous To Laugh In The Office

Donald Joondeph

Tuesday, October 4
Grieve Memorial Lecture
*Early Orthodontic Management Of Significant Skeletal
Discrepancies*

Nita Jupp

Friday, October 7
A New Era Of Patient Education And Case Acceptance

Friday, October 7
Change – An Essential Part Of Practice Growth

Yuzuru Kaneko

Friday, October 7
Symposium On Medical Emergencies
How To Handle It?

William Killoy

Thursday, October 6
Symposium On Guided Tissue Regeneration
*Controlled Local Delivery Of Tetracycline In
The Treatment Of Periodontitis*

Claude Lamarche

Wednesday, October 5
Why Does Complete Denture Treatment Fail?

Wednesday, October 5
Removable Partial Denture – The Future

Gilles Lavigne

Thursday, October 6
Bruxism: Controversy And Management

Racquel Z. LeGeros

Wednesday, October 6
**Symposium On Recent Advances
In Dental Calculus Formation/Prevention**
Composition And Structural Aspects Of Dental Calculus

Annette Ashley Linder

Thursday, October 6
Economics In Dental Hygiene

Sandra Lopez

Tuesday, October 4
*Balanced Living – The 90s Prescription
For Stress Management*

Michael MacEntee

Wednesday, October 5
Geriatric Dentistry

K. Mäkinen

Thursday, October 6
Xylitol Symposium
*Stabilization Of Rampant Caries By Means
Of Xylitol Gum Programmes*

Stanley Malamed

Sunday, October 2
Pain And Fear And The Future Of Dentistry

Tuesday, October 4
Vasopressors And Heart Disease

Irwin Mandel

Wednesday, October 5
**Symposium On Recent Advances
In Dental Calculus Formation/Prevention**
Calculus Formation And Prevention: Overview And Update

Philip Marsh

Tuesday, October 4
Symposium On Fluorides
Antiplaque And Antimicrobial Agents – Clinical Applications

Wednesday, October 5
Ecological Approaches For The Control Of Dental Plaque

Howard Martin

Wednesday, October 5
*Endo For The 90's – Flare, File And Fill
With New Instrumentation*

Rick Mathias

Tuesday, October 4
**Symposium On Infection Control –
Has It Gone Too Far?**
Infection Control

Glen McGivney

Monday, October 3 & Wednesday, October 5
Removable Partial Dentures
Tuesday, October 4
The Unhappy Denture Patient

Roland Meffert

Thursday, October 6
Symposium On Guided Tissue Regeneration
Absorbable Vs. Nonresorbable Membranes

John Molinari

Tuesday, October 4
**Symposium On Infection Control –
Has It Gone Too Far?**
*Occupational Infectious Disease And
The Challenge Of Infection Control*
Wednesday, October 5
Practical Infection Control For The 1990's

Domenico Morielli

Thursday, October 6
*Traumatic Injuries Of The Trigeminal Nerve:
Causes, Diagnosis, Treatment And Prevention*

Stephen Moss

Thursday, October 6
Infant Dental Care – What, Why And How

Graham Mount

Wednesday, October 5
The Wonderful World Of Glass Ionomer Cements
Thursday, October 6
Symposium On The Dynamic World Of Dental Materials
*Some Physical And Biological Properties
Of Glass Ionomer Cement*

Terry Myers

Thursday, October 6
Different Types Of Lasers And Their Use

Craig K. Naylor

Wednesday, October 5
*Restorative Prosthodontics – Techniques For
Improved Esthetics And Function*

Ken Neuman

Thursday, October 6
*Cosmetic Dentistry / Cosmetic Imaging –
New Vistas In Communication*

Erik Olsen

Tuesday, October 4
Quality Assurance – The Role Of The FDI

Thomas Olson

Thursday, October 6
Focus On Tax Planning Of The Future

J.P. Ouhayoun

Tuesday, October 4
*The Use Of Filler Biomaterials As Bone Substitutes In
Periodontology And Implantology*
Tuesday, October 4
Symposium On New Frontiers In Periodontics
The Role Of Micro-Organisms In Periodontitis

Continuing Education Credits

Participants will find, included in their convention kit, a form to record and verify attendance at the scientific sessions.

At the beginning and midway through each lecture, a three-digit verification number will be announced by the chairperson. Please note this number in the appropriate column. It is the full responsibility of the participants to maintain all necessary records required by their licensing boards or associations. Course code and number of credits for each lecture can be found in the program book. (AGD #82592)

Scientific Program

FDI
1994

Roy Page

Monday, October 3

Periodontics For The 1990's And Beyond

Tuesday, October 4

Symposium On New Frontiers In Periodontics

New Diagnostic Tools

Jens J. Pindborg

Tuesday, October 4

Symposium On Infection Control --

Has It Gone Too Far?

The Current Global Status

Tuesday, October 4

Current Concepts On Oral Precancer

James Pride

Tuesday, October 4

The New Business Of Dentistry

Wednesday, October 5

Symposium On Practice Management

Employee Satisfaction — What Makes A Great Dental Team

Peter Reichart

Friday, October 7

Oral Surgery For The General Practitioner

Dianne Rekow

Wednesday, October 5

A 1994 Update On CAD/CAM Systems

Andy Rivest

Wednesday, October 5 (Lecture)

& Thursday, October 6 (Hands-on)

Recent Prosthetic Advances In Osseointegration

Ad Modern Branemark

Denis Robert

Friday, October 7

Biomaterials And Restorative Dentistry Techniques

Pat Robertson

Jeffrey M. Coil

Lynn Smith

Tuesday, October 4

Dental Radiography

Bengt Rosling

Wednesday, October 5

Symposium On Recent Advances

In Dental Calculus Formation/Prevention

Anti-calculus Dentrifice's Role In Etiology

Of Periodontal Diseases

Keith Rossein

Wednesday, October 5

Provisional Restorations:

Two User Friendly Restorative Techniques

Salam Sakkal

Tuesday, October 4

Endodontics: Let's Make It Simple

Friday, October 7

Endodontic Failures:

Prevention And Management

Mariano Sanz-Alonso

Tuesday, October 4

Symposium On New Frontiers

In Periodontics

Treatment Modality Update

Dale Scanlan

Wednesday, October 5

Dental Hygiene And The Implant Patient

Clyde L. Schultz

Sunday, October 2

Recession Proof Your Practice:

Strategies For Minimizing

The Effects Of Economic Downturn

Jeffrey Sherman

Thursday, October 6

Dental Electrosurgery For The 90's

Sol Silverman, Jr.

Tuesday, October 4

Update On Infectious

Diseases In Dentistry

Scientific Program

Dennis C. Smith

Wednesday, October 5
Everything Old Is New Again

Thursday, October 6
**Symposium On The Dynamic
World Of Dental Materials**
Biocompatibility Of Dental Materials

Karl-Johan Söderholm

Thursday, October 6
**Symposium On The Dynamic
World Of Dental Materials**
Does Bonding Survive?

Thursday, October 6
In Vivo/In Vitro Evaluations Of Dental Composites

St. John Ambulance

Tuesday, October 4; Wednesday, October 5
& Thursday, October 6
Cardio-Pulmonary Resuscitation

Peter Stevenson-Moore

Wednesday, October 5
Osseointegrated Implants For The Partially Edentulous Patient

George K. Stookey

Friday, October 7
Symposium On Oral Research
Practical Use Of Fluorides For Caries Control

Jason M. Tanzer

Thursday, October 6
Xylitol Symposium
Caries Inhibition By Xylitol Chewing Gum

Sverker Toreskog

Thursday, October 6
*Construction Without Destruction — Clinical Consequences
Of Porcelain Bonded To Tooth-Structure*

Luc Trahan

Thursday, October 6
Xylitol Symposium
The Action Of Xylitol On Mutans Streptococci

Richard V. Tucker

Friday, October 7
The Cast Gold Restoration In General Practice

Isaac Van Der Waal

Tuesday, October 4
Diseases Of The Tongue: A Clinical Overview

Wednesday, October 5
**Symposium On Current Topics In The Diagnosis
And Treatment Of Mucous Membrane Diseases**
Diagnosis And Treatment Of Precancerous Lesions

Stephen H.Y. Wei

Tuesday, October 4
Total Patient Care In Pediatric Dentistry

Tuesday, October 4
Symposium On Fluorides
Fluorides What's New?

Gerald Wittenberg

Tuesday, October 4
Facial Imaging

Donald Woodside

Tuesday, October 4
*New Developments In The Diagnosis, Treatment
Planning And Treatment Of Malocclusion*

George Zarb

Tuesday, October 4
Prosthodontic Aspects Of Osseointegrated Implants

*In addition to the general scientific program,
free communications, poster presentations
and table clinics will be available.*

City Tours

FDI
1994

Vancouver is a city nestled between the Whistler Mountain Day Trip and the Scenic Harbour Cruise. It is a city where FDI participants can take part in the Fun Run and Walk below snow-covered peaks in the October sunshine. It's a city where dental professionals and their guests can enjoy a Breakfast with the Whales or take part in a delicious Chinese banquet. Welcome to exquisite Vancouver!

While at the 82nd World Dental Congress, take advantage of the Visits and One Day Tours designed especially for you.

Vancouver City Tour and Granville Island

Monday, October 3,
Tuesday, October 4 &
Wednesday, October 5

Luscious green gardens in the heart of downtown with towering trees and tropical flowers can be admired on this half day city tour. This trip will take FDI participants to Vancouver's two most beautiful parks, Stanley and Queen Elizabeth Park; the residential neighbourhood of Shaughnessy; historical Gastown and to the second largest Chinatown in North America.

A variation of this tour has replaced Gastown and Chinatown with a trip to Granville Island. This area of town is laden with specialty shops, galleries and bistros.



North Shore & Grouse Mountain Tour

Tuesday, October 4 &
Thursday, October 6.

Begin your day on top of the world with a morning tour of Grouse Mountain and the North Shore. Travel across the Lion's Gate Bridge to the Capilano Canyon and to the base of Grouse Mountain where you'll ascend by sky tram to Grouse's 3,700 foot high vantage point. From there, you'll enjoy a panoramic view of Vancouver. Next is a trip across the Capilano Suspension Bridge and then on to a fascinating salmon enhancement project. End your trip at Lonsdale Quay, a wonderful waterfront collage of shops, bistros and markets.



Scenic Harbour Cruise

Tuesday, October 4

Relax for an afternoon and let the skipper do all the work! Board a three hour cruise that lets you experience the charm of Vancouver's inner harbour. Superb views of the city skyline drift by as picture postcard scenery unfolds all around. The sights from the yacht are dazzling and there's always the opportunity to spot harbour seals and other marine life!



Salmon Fishing

Friday, October 7

The dawn mist will still be lingering as FDI participants set afloat for a morning of fishing. A specially equipped boat will transport you and fellow fisherman to experience the challenge of salmon fishing. Spend the first half of your day throwing your line into the depths of the ocean.



Vancouver Aquarium: "Breakfast with the Whales"

Wednesday, October 5

Enjoy a buffet breakfast in the company of both killer and beluga whales!

A daybreak departure will transport FDI early risers to Vancouver's public Aquarium to experience a breakfast under the watchful eyes of whales, sharks, dolphins and sea otters.

After the meal has concluded, participants will cross the Lion's Gate Bridge en route to the North Shore. The agenda of sights to be seen include the Capilano Suspension Bridge and the Nature Park.



A Day in Victoria

Friday, October 7

While in Vancouver, take advantage of its close proximity to British Columbia's capital city, Victoria. Victoria is a charming city that has delicately blended a distinct olde-world ambience with a modern city atmosphere. The tour begins with a 1 1/2 hour ferry ride to Vancouver Island. Once landed visitors will proceed directly to Butchart Gardens where they will have ample time to explore the awe-inspiring collection of plants and flowers. As the afternoon approaches, you visit Victoria's city centre for an afternoon of sightseeing.



Museum of Anthropology

Wednesday,
October 5 &
Thursday,
October 6

The indigenous peoples have populated the Western seaboard for many centuries. Their art and culture have been studied by historians, artists and authors. This half day excursion to the Museum of Anthropology offers you an opportunity to observe historical artifacts unique to West Coast Indian communities. This museum, situated on the ground of the University of British Columbia is dedicated solely to the preservation and presentation of native cultures.



City Tours

FDI
1994

Whistler Mountain Day Trip



Saturday, October 8

An internationally famous mountain resort, Whistler's sports facilities attracts visitors from all corners of the world. This quaint European style village coupled with alpine scenery makes it a favourite retreat in summer, autumn, winter and fall. Located near Vancouver, this resort is surrounded by rugged mountain ranges, stunning views, and an abundance of wildlife. Having reached the destination of Whistler Mountain, the time is yours to stroll, shop and participate in the various sporting and sightseeing activities.

Royal Hudson Steam Train and Britannia Excursion

Thursday, October 6

Snow-capped mountains, cascading waterfalls and a variety of wild-life are some of the enticing features of this journey aboard the Royal Hudson Steam Train. Beginning in Vancouver, this excursion travels through breath-taking scenery, winding its way across canyons and gorges until arriving in the quaint logging town of Squamish. After a few hours of free time, participants will board the majestic "Britannia" for a return cruise to Vancouver harbour.



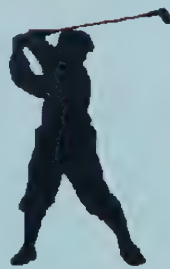
Fun Run and Walk



Thursday, October 6

Begin your morning with a fun run and walk through the scenic trails of Stanley Park. Whether it's 5 or 10 kilometres, join your fellow international runners along the Sea Wall of Stanley Park. Awards will be given to the winners of the competition, however, if you prefer to savour all of these sights, you can run or walk at your own speed.

Golf Day



Wednesday, October 5

Tee off in Vancouver! Wear your whites, bring your clubs, and hit those balls at one of Vancouver's numerous lush golf courses.

Golf enthusiasts from all over the globe will be partaking in this FDI event which is sponsored by Aurum Ceramic Dental Laboratories.

The dental trade exhibition of FDI 1994, the 82nd World Dental Congress consists of two exhibit halls.

Exhibit Hall, Convention Level: Booths 201 to 1927

Exhibit Hall, Cruise Ship Level: Booths 2004 to 7020

EXHIBIT DATES AND HOURS

Tuesday, October 4	09:00 - 18:00
Wednesday, October 5	09:00 - 18:00
Thursday, October 6	09:00 - 18:00
Friday, October 7	09:00 - 15:00

RESTAURANTS

There are four restaurants within the exhibit halls offering a variety of international dishes. The hours of operation are the same as exhibit hours.

Exhibit Hall, Convention Level –

Café Australasia and *Café Europa*

Exhibit Hall, Cruise Ship Level

Café of the Americas and *Café Vancouver*

DENTAL CLINIC OF THE FUTURE

We invite you to visit the Dental Clinic of the Future, located in the Exhibit Hall, Cruise Ship Level.

MOBILE DENTAL CLINIC

Come and see the Mobile Dental Clinic located in the Exhibit Hall, Cruise Level.

DRAWS

Volvo Car Draw — Deposit your personalized draw tickets at the Canadian Dental Association's booth #1822 on the Exhibit Hall, Convention Level. This vehicle is graciously donated by Volvo.

Aurum Ceramic/Classic – Harley Davidson

Draw — Deposit your draw tickets at the Aurum Ceramic/Classic booth – #1202 on the Exhibit Hall, Convention Level where the motorcycle is on display.

Air Canada Tickets Draw — FDI 1994 is offering two international economy class tickets to be drawn among participants. The designated draw box is located next to the Dental Clinic of the Future on the Exhibit Hall, Cruise Ship Level.

ALPHABETICAL LISTING OF EXHIBITS

3M Canada Inc.502, 504, 506, 601, 603, 605

A

A-Dec, Inc.220, 222, 224, 319, 321, 323
A.R. Medicom Inc.209, 211
Abel Computers Ltd.7011, 7013
Accu-Dent Research1206
Act Laboratories Ltd.6005
Aesthetic Porcelain Studios, Inc.2007
Allstar Dental Laboratories Ltd.8009
Almore International, Inc.3015
Alphadental Products Company6017
Amadent/American Medical & Dental Corp.925
American Dental Association420
American Dental Technologies Inc.1804
American Xyrofin, Inc.1413, 1415
Ampco Dental Equipment Inc.6012
Analytic Technology728
Anchor Implant Systems Inc.2009
APM-Sterngold2042, 2044
Appollo Dental Products4031
Arm & Hammer Dental Care1525
Aseptico Inc.1808, 1811
Ash Temple Limited1002, 1004, 1006, 1008, 1010
.....1012, 1101, 1103, 1105, 1107, 1109, 1111
Assoc. of German Dental Manufacturers
.....320, 322, 324, 326, 419, 421, 423
Astra Pharma Inc.511
Aurum Ceramic Dental Laboratories1202, 1204, 1208

B

Becker-Parkin Dental Supply Co. Inc.3020
Bego Bremer Goldschlaegerei401, 403, 405
Bego Canada401, 403, 405
Belmont Equipment Corp.
Div. Takara Co.202, 204, 301, 303
Beutlich L.P.206
Biodent3028
Bisco Dental Products1505, 1507
Block Drug Company (Canada) Ltd.1122, 1124
Brasseler1614, 1616
Buffalo/Bolton Dental Mfg. Inc.2024, 2026
Burroughs Wellcome Inc.823
Byte Dental Systems Inc.8011

C

Calcitek Inc.1707
Canadian Dental Association1822, 1824, 1921
Canadian Dental Service Plans/
Zadall1819, 1821, 1823
Canadian Dental Supply Ltd.1620, 1622, 1624
Canadian Health Advisory Consortium7020
Canebsco Reception Room Subsc. Services1409

ALPHABETICAL LISTING OF EXHIBITS

CDAnet	1923
Cendres & Metaux Inc. (Canada)	2025
Central Dental Ltd.	921
Centrix Incorporated	2015
Cerum Dental Supplies Ltd.	1212
Cerum Ortho Organizers	1214, 1216
Champion Dental Products Inc.	507
Classic Dental Laboratories	1301, 1303, 1307
Clinical Research Dental Supplies	422
Colgate-Palmolive Canada, Inc.	1320, 1322, 1324, 1326, 1328, 1419, 1421, 1423, 1425, 1427
Coltene/Whaledent	1225, 1227
Columbia Dentoform	1605, 1607
Confi-Dental Products Company	8015
Cosmedent Inc.	1428
Cottrell, Ltd.	1310, 1312, 1314, 1316
Creative Play Environments Mfg.	4029
Crosstex/Cross Country Paper Products	428
Custom Vacuum	1506, 1508

D

Dansereau Health Products Inc.	4023
Danville Engineering	1811
DCI International	1126, 1128
Dedeco International, Inc.	824
Degussa Canada Ltd.	620, 622, 624, 719, 721, 723
Den-Mat Corporation	1807
Den-Tal-Ez Equipment	1609, 1611
Den-Tal-Ez, Inc.	1514, 1516, 1613, 1615
Denerica Dental Corp./Renfert GmbH	411
Dent-X	508, 510
Dental Mac By Healthcare Communications	5017
Dental Plus	3047
Dentalaire Products International	3038
Dentamerica	1223
Dentatus AB	1826
Dentaurum J.P. Winkelstroeter KG.....	316
Dentech International	1602, 1604, 1701, 1703
Dentona GmbH	425
Dentorium Export Ltd.	6015
Dentsply Canada Ltd.	902, 904, 906, 908, 909, 910, 911, 912, 913, 914, 915, 916, 1001, 1003, 1005, 1007, 1009, 1011, 1013, 1015
Designs For Vision, Inc.	7012, 7014
Diadent Manufacturing Inc.	6014
Diatech Diamant AG Switzerland.....	826
DW Technology	806

E

E & D Dental Products/Safewave	2018
ECI Medical Technologies	8013
Efos Inc.	424

Ellman International, Inc.	1120, 2022
Encyclopaedia Britannica	213
Engle Dental Systems	3002
Equinox Financial Group, Tom Williams	1806
Espe Dental-Medezin GmbH & Co. KG	1716
Essential Dental Systems, Inc.	1524
Exan Technologies.....	1014, 1113
Exan/FDI Message Centre	1016, 1115
Excelco International, Inc.	305

F

Filhol Dental/Filpin Filpost Ltd.	408
Fine Arts Dental Laboratories Ltd.	808
Fischer Industries Inc.	3006
Fittydent Altwirth & Schmitt GmbH	627
Forest Medical Products, Inc.	613, 615
Friatec AG / Medical Devices Division.....	328

G

G. Hartzell & Son	3032
GC America Inc.	1220, 1222, 1224, 1226, 1228, 1319, 1321, 1323, 1325, 1327
Genex/Midwest/Rinn Corp.	1719, 1721, 1723, 1725
General Scientific Corporation	2032
Genie Computer Systems Inc.	3030
George Taub Products/Reliance Dental.....	215
Germany Official Participation Ministry Of Economic - Bonn Organizer	302, 304, 306, 308, 310, 312, 314, 316, 320, 322, 324, 326, 328, 401, 403, 405, 407, 409, 411, 413, 415, 419, 421, 423, 425, 427
Germiphene Corporation	5019, 6020, 6022
Gilbert's Dental Supplies Inc.	2040
Goof Denmark	927

H

Hager & Meisinger GmbH	415
Harry J. Bosworth Company	1828
Health Pro Group	3004
Healthfirst Corporation	426
Healthgroup Financial	509
Heraeus Kulzer GmbH.....	1702, 1704, 1706
Herrco Enterprises Inc.	827
Higa Manufacturing Ltd.	3041
Hoechst-Roussel Canada Inc.	820, 822
Hu-Friedy Manufacturing Company, Inc.	1520, 1522

I

I Contact Communications Corporation	6016
Implant Innovations	7015, 7017
Inland Dental Dist. Ltd.	2030
Innova Corp.	6018

ALPHABETICAL LISTING OF EXHIBITS

Innovadent Technologies Ltd.	3053
Insight Imaging	7001, 7003, 8002, 8004
Institut Straumann AG	5003, 5005, 5007, 6004, 6006, 6008
Ivoclar North America, Inc.	1720

J

J. Morita Corporation	1402, 1404, 1406, 1408, 1501, 1503
J.F. Jelenko & Co.	905, 907
J.M. Ney Company International, The	1407
Jeneric/Pentron	1809
John O. Butler Company	619, 621, 623, 625
Jordan AS	1626, 1628
JS Dental Mfg. Inc.	2027

K

Kaltenbach & Voigt GmbH & Co. - Kavo -	602, 604, 606, 608, 701, 703, 705, 707
Karl Hammacher GmbH	413
Kavo Elektrotechnisches Werk Leutkirch	702, 704, 801, 803
Keeler Instruments Inc.	923
Kerr, A Subsidiary Of Sybron Corporation	414, 416, 513, 515
Kilgore International, Inc.	1527
Knight Manufacturing Inc.	2037, 2039
Knowell Therapeutic Technologies Inc.	3031
Kodak Canada Inc.	1410, 1412, 1414, 1416, 1509, 1511, 1513, 1515
KPMG Peat Marwick Thorne	2033

L

L & R Manufacturing Company	203
Lactona/Universal Dental Corporation	3051
Lares Research	3013
Lascod Spa	3027, 3029
Lasedent Technologies Inc.	2011
Life-Like	4005
Lifecore Biomedical/Oral Restorative	1526, 1528
Litema/Kentzler	310

M

M&CC Cabinet Systems, Ltd.	514, 516
M.D.T. Industrial Dental Tools Inc.	4021
Mada International Ltd.	2031
Marus Dental International	7002
Masel	1726
Matrx Medical Inc.	1805
Matsutani Seisakusho Co. Ltd.	1426
Maxill Inc.	6003
McNeil Consumer Products Company	1308
MDT Corporation	1502, 1504, 1601, 1603

Medi-Dent Serv./Medi-Dent Prof. Serv.	1813, 1815
Medisporex-PVT-Ltd.	4003
Megadenta Ltd.	312
Merck Frosst Canada-Vaccine Division	8016
Metalor	1705
Metasys Dental Products Inc.	725, 727
Miles Inc, Dental Products	1801, 1803
Miltex Instrument Company, Inc.	1727
Mirage Dental Systems	3005
Mo-Dent Ltd.	302, 304, 306, 308
Mobile Dental Equipment Corp. (M-Dec)	8007
Moore Pemaco	3043
Mosby Times Mirror Prof. Publishing	309
Moyco Union Broach	521
Mydea Marketing Inc.	8012
Myo-Tronics, Inc.	4035

N

Nakanishi Dental Mfg. Co. Ltd.	1800, 1802
Napa Dental Products	3008
National Biological Labs, Inc.	307
Nephron Corporation	1927
New Image Industries	1519, 1521, 1523
New Technology Instruments	3001
Nite White	3049
Nobelpharma	1020, 1022, 1024, 1026, 1028, 1119, 1121, 1123, 1125, 1127
Northstar Dental, Inc.	3003

O

Obtura / Texceed	523
OMS - Ortho-Mix Supplies Inc.	316
Op-D-Op Visor Shields	2038
Oral Logic Inc.	2008
Oral-B Laboratories	1302, 1304, 1306, 1401, 1403, 1405
Oralgiene USA Inc.	7019
Orascope Research	520, 522
Ortho Arch Co. Inc.	3055
Oxyfresh (Canada)	205, 207
Oxyfresh (USA)	825

P

Panasil Impression Materials	1210
Panoramic Corporation	626, 628
Pascal Company Inc.	819, 821
Patterson Dental/ Dentaire Canada Inc.	402, 404, 406, 501, 503, 505
Periodontal Health Brush Inc.	5015
Pharmascience Inc.	1606
Phase Change	8017
Planmeca OY	920, 922, 924, 926, 928, 1019, 1021, 1023, 1025, 1027

ALPHABETICAL LISTING OF EXHIBITS

Polaroid Canada Inc.	2004
Precise Dental.....	2017
Premier International	1709
Premier/Espe-Premier Canada Inc.	1711, 1713, 1715
Prestige Medical	706, 805
Pride Institute	1411
Pro Dentec Canada	1219
Procter and Gamble	708, 710, 712, 714, 716, 807, 809, 810, 811, 812, 813, 814, 815, 816
Professional Practice Builders, Inc.....	2014
Professional Practice Sales Ltd.	2034
Promident Manufacturing Limited	2019
Pulpdent Corporation	4019

Q

Quality Aspirators	2010
Quattrotti SRL	4007
Quintessence Publishing Company Inc.	519

R

Regam Medical Systems (Div. Bytech Ltd.).....	4037
Ribbond, Inc.	1424
Richmond Dental Company	7004
Ritter Dental Equipment Inc.....	407, 409
Ritter GmbH Dentaleinrichtungen	407, 409
Rocky Mountain Orthodontics	720, 722
Roeko Roescheisen GmbH & Co.	427
Royal Bank Of Canada	3019
Royal Dental Manufacturing Inc.....	8014

S

Safeskin Corporation	2006
Schein Henry Inc.	208, 210, 212, 214, 216
Schick Technologies Inc.	3023
Schooner Academics	1305
Sci-Can A Div. Of Lux & Zwingenberger	610, 612, 614, 616, 709, 711, 713, 715
Septodont, Inc.....	524, 526, 528
Shaw Laboratories Ltd.	726
Shinhung Co., Ltd.	7005, 7007, 8006, 8008
Shofu Dental Corporation	802, 804, 901, 903
Siemens Aktiengesellschaft Medical Eng.	1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1201, 1203, 1205, 1207, 1209, 1211, 1213, 1215
Sinclair Dental Co. Ltd.	311
Smilemakers Inc.	3021
Smithkline Beecham Pharma Inc.	3039
Sofradex	6011, 6013

Soredex Medical Systems	1619, 1621, 1623, 1625
Southern Dental Industries	1627
Space Maintainers Laboratories Canada	1309, 1311, 1313, 1315
SS White Burs Inc.	1825, 1827
Star Dental	1510, 1512
Stelte Company Inc.	7018
Steri-Oss	2041
Sultan Group	5011, 5013
Sunrise Technologies, Inc.	1925
Svenska Dental Instrument AB	2016

T

Teledyne Water Pik Canada	1420, 1422
Temrex Corporation	1221
The Bonart Co., Ltd.	2023
The Hygenic Corporation	3022, 3024
Tri Hawk Corporation	201
Troll Plastics Inc.	3036
Trophy Radiology	607, 609, 611
Tuttnauer Co. Ltd.	525, 527

U

U.N.I.D.I. Nat'l Union Italian Dental Industries	3035, 3037
Ultracam	3012, 3014, 3016, 4011, 4013, 4015
Ultradent Products Inc.	1710, 1712, 1714
Unident Limited	828
Unilever Research	1816, 1818, 1915, 1917
USDI	3007

V

Van R/Clive Craig/Cadco	6001
Viade Products, Inc.	8018
Virtual Vision	7016
Vita Zahnfabrik-H.Rauter GmbH & Co. KG	302, 304, 306, 308
Vivadent	1724

W

W & H Dentalwerk Burmoos GmbH	313, 315
Warner-Lambert Canada Inc.	1608, 1610, 1612
Werther International S.R.L.	4001
Westan Dental Products Group Ltd.	724
Williams	1722
Wright Dental Canada Limited	1708
Wrigley Canada Inc.	410, 412

Y

Young Dental Manufacturing Company	1728
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Z

Zest Anchors Inc.	3045
Zhermack Spa	919
Zirc Dental	512

Extend your vacation!



Canadian Rocky Mountains

See the wonders of the Canadian Rockies on this post-Congress train excursion! Travel high into this awe-inspiring scenery of mountains, glaciers and snow-capped peaks! See Canada as you have never seen it before!

- Travel from British Columbia to Alberta through the Rocky Mountains!
- Observe the diverse wildlife and natural attractions found only in this mountain range!
- Visit the famous cities of Jasper, Banff and Lake Louise!
- Gaze upon mountains that disappear into the clouds!
- See Calgary — the home of the 1988 Winter Olympics!
- Travel to the region where glacier lakes lie in the midst of towering peaks!

The Canadian Rocky Mountains tour is a trip not to be missed.



Alaska

Sail into your week at FDI '94 with a memorable pre-Congress cruise to Alaska!

- Visit Glacier Bay!
- See authentic totem poles in their natural settings!
- Toast your friends at the Red Dog Saloon — a taste of the gold rush days!

This trip of a lifetime will take you to the northern-most coast of the United States.



Los Angeles

Board the Holland America's M.S. Westerdam on October 10th for a post-Congress tour to Los Angeles.

- Spend two extra days in Vancouver before setting sail for a new destination!
- See the western seaboard of Canada and the United States!
- Visit the city of celebrities and beaches!

Take a little trip to this infamous and exciting city!



Australia and New Zealand

Travel "down-under" with the post-Congress tour that takes you to the homes of the koala bear and kiwi fruit!

- Take part in a wine tour!
- Visit Cairns, a city surrounded by the Great Barrier Reef and tropical rain forest!
- Spend two nights on a sheep, kiwi fruit or cattle farm!

Take advantage of this opportunity to meet fellow dentists while attending regional dental meetings.



Hawaii

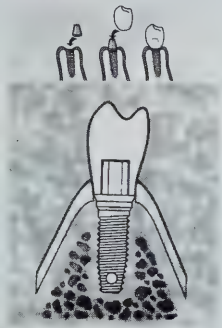
Bask in the warm Hawaiian sun in this post-Congress tour to the Pacific!

- Stroll along beautiful beaches!
- Photograph breathtaking scenery!
- Swim, sail, or surf in the Pacific Ocean!

Spend your week relaxing on the magnificent tropical island of Oahu.

For more detailed information, contact the FDI 1994 Organizing Committee at 1-800-267-6354 by telephone or at (613) 523-3062 by fax.

IMPLANTS



Craniofacial Osseointegration

John F. Wolfaardt, BDS, M.Dent., PhD

Gordon H. Wilkes, MD, FRCSC

ABSTRACT

Craniofacial osseointegration has been hailed as the most significant advance in maxillofacial prosthetic restoration over 25 years. It provides a particularly unfortunate group of patients, who previously may have had few treatment options, with new reconstructive opportunities. This paper outlines the surgical and prosthetic techniques of craniofacial osseointegration. Treatment outcomes in terms of individual implant success rates are described and the role of hyperbaric oxygen is considered. The need for future avenues of development are also discussed. Craniofacial implants have become an integral part of the treatment options available for head and neck reconstruction. It is important that this care is provided within a multidisciplinary clinical-research environment.

SOMMAIRE

Au cours des vingt-cinq dernières années, on a vu dans l'oséo-intégration cranio-faciale le progrès le plus important accompli touchant les restaurations prothétiques maxillo-faciales. Grâce à cette technique, des patients particulièrement malheureux à qui, auparavant, s'offraient peu de choix de traitement voient maintenant la dentisterie

leur proposer de nouvelles solutions. Dans cet article, on présente les techniques chirurgicales et prothétiques de l'oséo-intégration cranio-faciale. On y indique quelles chances de succès chaque implant peut avoir et on y examine le rôle que joue l'oxygénothérapie hyperbare. Enfin, on explore les voies que cette techniques pourrait prendre à l'avenir pour répondre aux besoins. Les implants cranio-faciaux font maintenant intégrale-ment partie des choix qui s'offrent pour les reconstructions de la tête et du cou. Il est important que ces opérations aient lieu dans un milieu qui se consacre à la recherche clinique multidisciplinaire.

Introduction

The head and neck area is central to the human psyche. Absence, mutilation or loss of a body part from this region may have a profound and negative impact on an individual. Surgical autogenous reconstruction may be contra-indicated or technically impossible. Prosthetic reconstruction becomes the treatment modality of choice in such circumstances.

For a facial prosthesis to be successful, it must meet the criteria of esthetic acceptability, functional performance, biocompatibility and desired retention. Retention of facial prostheses has been an area of controversy. Facial prostheses may

be retained by mechanical means, but the majority of patients have to rely on the use of adhesive systems.¹⁻⁵ The use of adhesives remains controversial primarily because of concerns for the tissue surfaces, difficulty of manipulation, and the impact on the prosthesis, as well as the additional cost to the patient.^{1-3,6-8}

In the past, mechanical retention has involved the engagement of divergent tissue undercuts or the use of external retention, such as head bands, elasticized retention, spectacle frames or other methods of varying ingenuity. With the adaptation of dental implant techniques into the sphere of facial prosthetics, it is now possible to provide secure prostheses without jeopardizing the integrity of the skin, underlying tissues or the prosthesis. Not surprisingly, the use of implants for the support and retention of facial prostheses was hailed in 1986 as the most significant advance in the field in the past 25 years.⁵

Craniofacial Osseointegration: History, Technique and Treatment Outcome

History

The principles of osseointegration are well known, and the outcomes of this treatment in edentulous patients have been established

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in longitudinal⁹ and replication studies.¹⁰ This technique's application to maxillofacial prosthetics was reported as early as 1979, when Brånemark placed an implant in the mastoid region to retain an artificial ear.¹¹ By 1984 Brånemark's technique was released internationally for clinical application, and from 1990 onwards numerous reports confirmed the efficacy and predictability of implant support and retention for extraoral restorations.

Surgical Technique

The procedure developed by Brånemark relies on a meticulous surgical technique, which is usually performed in two stages.¹⁰ Recently, however, one stage techniques have been used.^{12,13}

The surgical technique for placing craniofacial implants is essentially similar to that used for intraoral implants, but it differs in four important ways.¹⁴ First, the implants are smaller, with a diameter of 3.75 mm and lengths of 3.0 or 4.0 mm. They have a perforated flat flange, 5.5 mm in diameter, to limit penetration of the implant through the bone (**Fig. 1**). Second, special attention must be given to the location of implants, due to the proximity of vital organs. Third, as less bone volume is drilled, the surgical technique does not use separate spiral drills and counter-sinks. Finally, very careful attention must be paid to the skin coverage surrounding the percutaneous abutment, as the skin in this area has to be thinned and made immobile.

Usually the surgery is performed in two stages, under local or general anesthesia, although one-stage procedures are being undertaken in the mastoid region with increasing frequency,¹⁵ particularly for the placement of bone anchored hearing aids. Initially the skull is exposed and the site for the implant is located. Spherical drills are used to prepare pilot holes to a 3.0 mm depth. Then, if sufficient bone exists, the depth of the pilot holes is increased to 4.0 mm. All bone drilling is performed with preset rotary instruments at low speed and torque under copious saline irrigation. The pilot holes are widened with the combined spiral drill and



Fig. 1: View of extraoral implants showing perforated flange and threaded fixture.

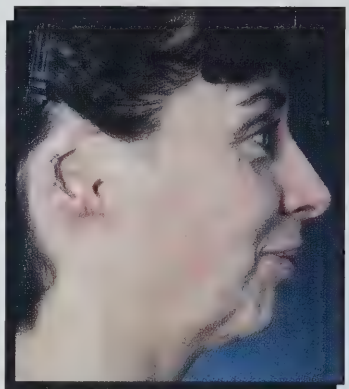


Fig. 3: A patient who sustained trauma with loss of ear. The bar is supported on two implants in the mastoid region.

countersink to provide a 5.7 mm wide base for the 5.5 mm wide flat flange.

Once drilling is complete, the hole is threaded and the implant fixture inserted (**Fig. 2**). Finally, a cover screw is placed over the fixture and the periosteal and the skin flaps are closed.

A period of several months is allowed before the second stage of surgery. The minimum period of 3-4 months may be extended to 12 months depending on the location, bone quality, systemic conditions and previous exposure to radiation.

The skin is penetrated by the implants, usually without adverse reaction providing the skin does not move about the percutaneous abutments and it is free of hair follicles.¹⁵ At the second stage procedure, a full thickness skin flap is raised over the fixtures. If hair follicles are found, a hair-free graft can be used. The periosteum is dissected to a thin layer and punched to expose the fixture. The skin flap

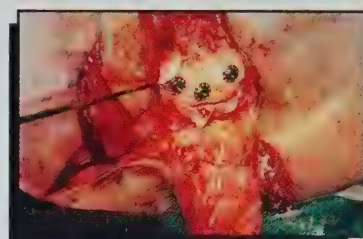


Fig. 2: Fixtures inserted into mastoid process of temporal bone.



Fig. 4: The completed silicone auricular prosthesis in position. The silicone prosthesis has an acrylic resin substructure which houses clips to provide retention.

is then thinned to almost split skin thickness. It is then resutured and a punch is used to perforate the skin over the implants. The cover screw is removed and an abutment of suitable length is connected through the skin. Healing caps are placed over the abutments and a lubricated 1.0 cm gauze dressing wrapped around the healing caps. A pressure dressing is applied over the area for 12-48 hours. Dressings are changed over a one- to two-week period, and after three to six weeks the prosthesis can be made.

Reconstructive and plastic surgery is frequently required to prepare the surrounding bone and soft tissues for an adequate prosthetic result. In the authors' experience, over half of the patients treated at the Craniofacial Osseointegration and Maxillofacial Prosthetic Unit (COMPRU), Edmonton, have required adjunctive reconstructive procedures. These vary from more minor procedures such as brow lifts, brow grafts and external auditory meatus repositioning to major



Fig. 5: A bone anchored hearing aid attached to a craniocaudal implant placed in the mastoid region.

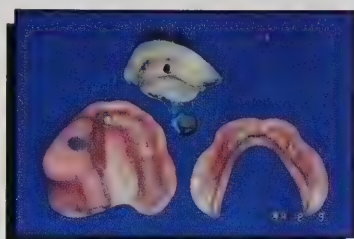


Fig. 7: The orbital prosthesis, maxillary obturator and mandibular denture are all implant supported.

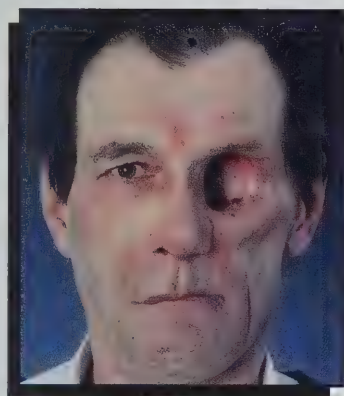


Fig. 6: A patient who underwent orbital exenteration and radical maxillectomy for a maxillary antral carcinoma. Following radiotherapy, the inferior orbital rim was reconstructed with a free vascularized scapula bone graft. Implants were placed in the graft and supraorbital rim at the same time. Implants were also placed in the maxilla and mandible.

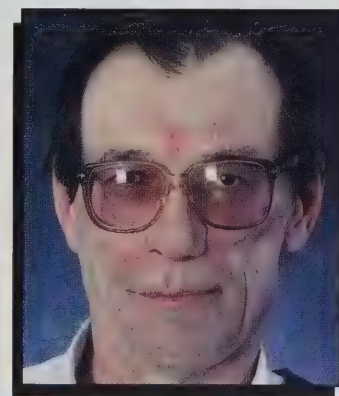


Fig. 8: View of the completed reconstruction.

procedures such as free vascularized flaps.

Prosthetic Technique

An impression of the defect is made by placing impression copings on the implants, stabilizing them with resin and recording the impression with an alginate or elastomeric material. The impression material is backed with gypsum or acrylic resin. Making the impression can be difficult if the implants lie radially, as in the orbit. However, once the impression has been recovered, abutment replicas are connected to the impression copings and the master cast is poured in an improved stone. A system of retention is devised, which may consist of bar and clip, magnetic or mechanical attachment, or a combination of these systems.

The retention system will generally be housed in an acrylic resin sub-structure, which should not

impinge on the aeration of the skin surrounding the implants. The prosthesis is sculpted in wax on the master cast and processed in intrinsically custom-shaded silicone elastomer, which is bonded to the acrylic resin sub-structure. Then the surface is colored extrinsically and delivered to the patient.¹⁶⁻¹⁸

Treatment Outcome

In 1985, Tjellström¹⁴ published the case results of 115 patients treated with 187 craniocaudal implants. The period of follow-up was between one- and seven-years. Six of the 187 implants were removed at the time of assessment. In 1987, Holgers et al¹⁹ reported on 32 patients, with 136 fixtures, who were followed for three to 66 months. Nine of the implants were removed, and less than 10 per cent of the subjects experienced an adverse skin reaction. In another report, Laney¹¹ cites the results of Parel, who collected data from 13 U.S. centres. This report presents a 94-per-cent success rate in patients with 268 orbital, mastoid or nasal implants that had supported prostheses for up to one year.

The mastoid implants were most successful (99 per cent), while the nasal implants were the least successful (76 per cent). The same report presents a 64-per-cent success rate in 11 radiated patients with 50 implants, where the orbit was cited as being the most vulnerable site.

A report on treatment outcome compares patients treated in Sweden and the United States.²⁰ This study compared the success rates in non-radiated and radiated patients. In the non-radiated group, the success rates were similar for orbital and mastoid implants, but a difference occurred in the success of implants in the nasal region. This difference was attributed to the higher number of patients treated with nasal implants in the U.S. The high success rates achieved in the mastoid and non-radiated orbital regions have led to the suggestion that fewer implants are required in these regions to support a prosthesis.

In the mastoid region, a 99.7 per cent success rate has been achieved with implants used to supported bone anchored hearing aids.²⁰ Parel and Tjellström²⁰ concluded that non-radiated patients can be effectively treated with osseointegrated implants to retain a facial prosthesis. Implants in the orbital area appear to be at slightly greater risk for failure, however, and this tends to occur as a late failure after several years of use. Clearly, the radiated patient must be treated with caution, and only with a full understanding of the biological effects of therapeutic radiation and the possibility of implant failure in select areas of the skull.

Jacobsson et al²¹ reported on 87 patients who had been treated for orbital and auricular defects at Sahlgren's Hospital in Göteborg, Sweden. Three hundred and fifteen fixtures had been placed in this group, and only patients who had worn a facial prosthesis for not less than six months were included in the study.

This study served to further confirm the findings of the earlier studies. Importantly, the authors proposed several success criteria for craniocaudal implants. In essence, the criteria stipulate that:



1. Individual unattached implants should be immobile when tested clinically.
2. Skin around the abutments should be essentially free of reaction in 95 per cent of all observations.
3. Individual implants should be free of persistent and irreversible signs and symptoms.
4. In the context of the above criteria, a five-year success rate of 95 per cent in the mastoid process, and 90 per cent in the orbital region, should be achieved in the non-irradiated patient.

The success rate of implants in irradiated bone has been considered by Granström et al²² and Johnsson et al.²³ These workers have focused their attention on the use of hyperbaric oxygen therapy (HBO) to improve individual implant survival rates. Granström et al²² report that a 58 per cent failure rate for implants in the orbit and maxilla was reduced to 2.6 per cent with the use of HBO. As a result of the work of Granström and co-workers, in several centres, HBO is now considered essential to the use of osseointegrated implants in irradiated bone.

In a more recent study, Wolfaardt, Wilkes, Parel and Tjellström²⁴ reported on the Canadian experience with craniofacial implants. This study reported on 222 implants placed in 91 patients at six centres in Canada. Of the 222 implants placed, 138 were inserted into non-radiated patients and 48 were placed to support bone anchored hearing aids. Two different types of implants were used to support the bone anchored hearing aids, of the 48, there were 24 of the Nobelpharma (Nobelpharma AB, Göteborg, Sweden) type and 24 of the Xomed Audiant (Xomed-Surgitek, Mississauga, Ontario) type.

The individual implant success rate of the Canadian experience for non-radiated patients (97.8 per cent) was very similar to those of the Swedish (98.4 per cent) and U.S. (94.4 per cent) experiences. In radiated patients, the success rate in Canada was higher (94.4 per cent) than in Sweden (57.9 per cent) and the U.S. (64.7 per cent). This was considered to be a func-

tion of the shorter follow-up time in the Canadian experience.

The Future

Craniofacial implants, like other implants, require ongoing scientific investigation. Treatment selection criteria are a priority. For example, when should an autogenous ear reconstruction be selected as opposed to an implant-supported prosthesis.²⁵ The skin-titanium interface, radiological imaging of the implants, means of testing irradiated bone viability, biomechanical designs and patient response to treatment are all among the many issues requiring attention. The craniofacial skeleton has highly variable osseous and soft tissue structures, which makes the use of craniofacial implants all the more challenging. This factor alone provides an unavoidable stimulus for further research and development.

Conclusion

Eight years ago Parel et al⁵ cited craniofacial osseointegration as the most significant development in the field of facial prosthetic restoration in the past 25 years. For those using this technique, there is little doubt that this statement is valid. Yet, when craniofacial osseointegration is reviewed from the scientific viewpoint, there is still a great deal to be learned and understood. The lack of long-term multinational prospective data and the use of the technology in special circumstances such as in children or in therapeutically radiated patients demands that we, as clinicians and scientists, proceed with caution.

The complexities of craniofacial osseointegration procedures, the need for a team approach, the requirements of appropriate aftercare, and the lack of knowledge in certain areas of this biotechnology dictate that these procedures should only be undertaken by multidisciplinary teams who have the clinical, scientific and academic background to support this modality of treatment. Laney,¹¹ in discussing craniofacial osseointegration, makes an important statement in this regard. He considers that the craniofacial region is highly visible and psyche-sensi-

tive, thus deserving our best professional effort in reconstruction and rehabilitation. ■

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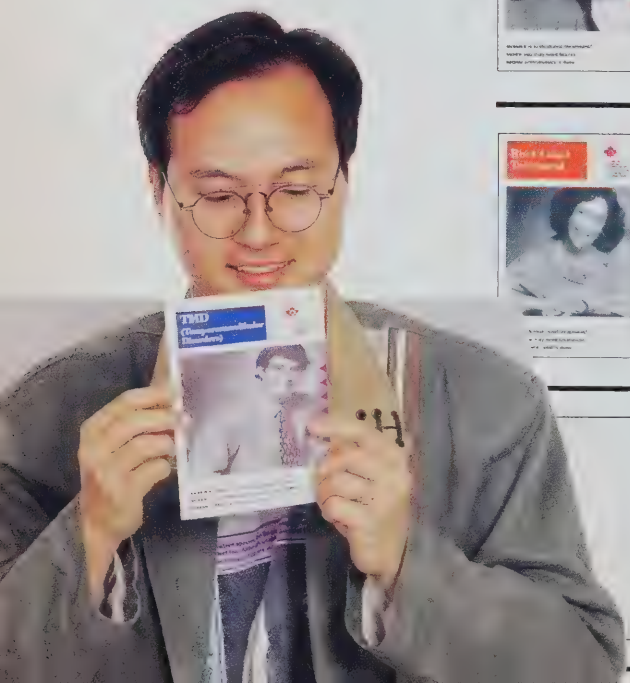
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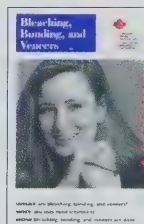


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WHY you may need treatment.

HOW bleaching, bonding, and veneers are done.

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HOW crowns and bridges are done.

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Orthodontics

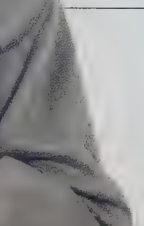


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Root Canal Treatment



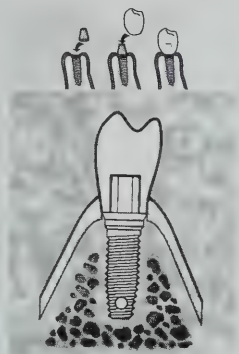
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The Role of the Restorative Dentist In the Diagnostic and Maintenance Phases of Implant Therapy — Part I: Patient Selection

Randall D. Mazurat, B.Sc., DDS, MRCD(C)

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W. Brock Love, DMD, M.Sc., FRCD(C)

Introduction

Although the achievement of osseointegration is predictable, it is not necessarily synonymous with rehabilitative success. Implant therapy is an adjunctive treatment modality that should only be used after comprehensive treatment planning and an evaluation of the risks and benefits associated with the proposed treatment. Brånemark and others have conclusively demonstrated that under controlled conditions, titanium is structurally integrated into living bone with a very high degree of predictability, and without long-term tissue inflammation or fixture rejection.^{1,2} Further evidence exists in the dental literature to suggest that the creation of osseointegration may be independent of locale, clinician or implant system.^{3,4} The attainment of restorative success, while contingent on the creation of osseointegration, is dependent on patient acceptance of their definitive treatment and long term maintenance of the prosthesis and osseointegration.

The Roles of the Restorative Dentist

With the current rapid advancement of implant dentistry, it is logical to assume that general practitioners will play an increasingly active role in the provision of im-

plant therapy, especially in the restorative aspect of treatment. The restorative stage of implant therapy may be subdivided into three major phases:

1. Diagnostic: patient selection and prosthetic planning;
2. Rehabilitation: provision of conventional and implant prostheses;
3. Maintenance: continuance of oral health and prostheses serviceability.

This article will focus on the diagnostic phase of implant therapy. Practitioners frequently underestimate the time and effort that must be expended to achieve and then ensure ongoing optimal results. To illustrate this, we will review data obtained from a clinical implant study undertaken at the faculty of dentistry, University of Manitoba.

The Diagnostic Phase Of Implant Therapy

The restorative dentist must assume responsibility for planning, coordinating and sequencing treatment. Here, it is imperative for the dentist to determine whether implant therapy is in fact the treatment of choice, rather than determining whether this form of treatment is possible. The initial phase of treatment is therefore directed toward developing a sound treatment plan, with emphasis and

recognition of those factors that indicate the feasibility of implant therapy.

Guidelines For Patient Selection

For the most part, patients who are interested in, and/or are candidates for implant therapy will have evidence of unsuccessful conventional dental therapy. These patients, will express dissatisfaction with, or be unable to wear, conventional prostheses. A thorough systematic examination is required to provide the essential diagnostic data necessary to formulate a working treatment plan and to determine patient suitability for dental treatment.

The patient's current medical status is investigated to determine whether he or she is a candidate for extensive dental therapy. At the same time, the dental history and examination provide information on actual and perceived patient needs, in terms of the basic parameters of function, esthetics and phonetics. The patient's attitude and expectations of dentistry are explored to determine emotional and psychological stability.

After careful consideration, if a patient's existing dental condition is deemed inadequate, and they are sincere in committing to treatment, a determination of viable treatment modalities is initiated.

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Selecting the appropriate restorative modality is the responsibility of the clinician who will ultimately construct the definitive prosthesis and provide ongoing maintenance and follow-up. It is best done in the diagnostic phase, prior to seeking surgical consultation.

To determine the appropriate prosthetic modality, the clinician must expand the dental examination, and acquire and analyze additional data such as mounted diagnostic casts, radiographs and photographs. It is imperative to include the patient in the treatment planning process, since the ultimate treatment plan will depend as much on patient factors as it does on dental factors. The clinician should weigh what is practical in terms of the potential for improvement against the patient's current desires and expectations. Restorative success hinges on the patient's acceptance of treatment.

Materials and Methods

Patients who presented for treatment at the University of Manitoba Implant Clinic were evaluated. The patient population was comprised of individuals referred from private practice, the undergraduate clinic, or by former patients, as well as the respondents to an advertisement in the local newspaper seeking potential implant patients. All patients attended an information seminar, where they were appraised of the nature of the clinical study and of the criteria for inclusion or exclusion.

An implant team, consisting of an oral surgeon, periodontist, two prosthodontists and two general practitioners conducted the initial evaluation and analyzed the diagnostic data according to the criteria for inclusion and exclusion presented in **Tables I and II**. A complete medical and dental history, clinical examination, diagnostic impressions, radiographs and photographs were obtained during two clinical appointments. The team felt it was mandatory to gather sufficient information during this initial evaluation so that it could determine the status of existing dental prostheses, prosthetic needs and patient expectations.

TABLE I
Inclusion Criteria

Criteria	No. of Patients	Per cent
18+ years	1	0.8%
Give informed consent	6	4.7%
Participate for 5 years	9	7.1%
Adequate bone quality	5	3.9%
Adequate bone quantity	49	38.6%
Total patients rejected	70	55.1%

Table II
Exclusion Criteria

Criteria	No. of Patients	Per cent
History of drug abuse	0	0.0%
Excessive smoking (1+ pack/day)	2	1.6%
Uncontrolled systemic disease	5	3.9%
Irradiated surgical site	0	0.0%
Psychological unsuitability	4	3.2%
TMJ pathology (unresolved)	1	0.8%
Extensive untreated dental disease	37	29.1%
Pregnancy	2	1.6%
Conventional dental treatment the treatment of choice	6	4.7%
Total patients rejected	57	44.9%

Patients who were not excluded from the study during the initial evaluation underwent further evaluation and consultation with the team. Treatment options were explained, the proposed treatment was finalized, and informed consent was obtained. Patients were evaluated until 90 patients were selected for inclusion in this study.

Results

Two hundred and seventeen patients were examined and evaluated according to the criteria presented in **Tables I and II** to select the 90 patients who made up the implant treatment group. The majority of patients found to be unsuitable for treatment either failed to meet the inclusion criteria of adequate bone quantity (38.6 per cent) or the exclusion criteria of having extensive untreated dental disease (29.1 per cent). An analysis of all

the patients examined in this study is presented in **Table III**.

Discussion

The overall aim of this study is to determine the clinical effectiveness of the implants and restorations in the patient group (N=90) over a five-year period. Patients were selected for treatment in either arch, using single or multiple fixtures (**Table IV**). Some of the selection criteria established may not be applicable to private practice, for example, such as the criteria used to exclude patients from the study who required significant conventional dentistry in addition to implant therapy. Data analysis revealed that 29.1 per cent of the patients excluded from the study fell in this category. The significant number of patients with extensive untreated dental disease, as well as those considered to be better can-



Table III
Screening Summary

Patients Rejected				Patients Accepted			
Male	46	Dentate	108	Male	44	Dentate	56
Female	81	Edentulous	19	Female	46	Edentulous	34
Total	127		127		90		90

Table IV
Fixture Site Distribution

Criteria	Maxillary Arch	Mandibular Arch
Single anterior	24	2
Single posterior	15	8
Multiple anterior	30	141
Multiple posterior	10	71
Total	79 (26.2%)	222 (73.8%)

didates for conventional dental treatment, illustrates the importance of conducting a thorough examination and treatment planning to fulfil the patient's overall dental needs.

Given the dictates of the study — the need to complete restorations within an acceptable time limit and to ensure patient availability for follow-up — the criteria used to exclude patients from our study group are reasonable. However, many of the patients rejected due to untreated dental disease may be appropriate candidates for implant treatment in private practice, provided their conventional dental needs are met in conjunction with implant therapy.

The criteria used in this study are important for all general practitioners, whether they intend to provide implant therapy themselves or opt to refer patients to other practitioners for implant restoration. Approximately 43 per cent of the patients lacked sufficient quantity of bone (39 per cent) or quality of bone (four per cent) to place implants without adjunctive surgical procedure, i.e. bone grafting augmentation. Biologic unsuitability was, in fact, a primary reason for excluding patients from the study. For these patients, the need to provide sound conventional dental treatment becomes paramount, and in the majority of cases, it will remain the responsibility of the

general practitioner to provide this treatment.

Summary

The objective of patient selection is to ensure that the patient's need and desire for dental treatment is consistent with the clinical findings and the clinician's ability to provide treatment.

Considerable effort is required to gather and analyze the data necessary to determine whether implant therapy is feasible. Additional planning is required to determine if this is the best treatment modality. All aspects of dental treatment need to be considered and planned before the implant phase of treat-

ment is contemplated. Our experience indicates that the potential need, and indeed necessity, for conventional dental treatment in patients seeking implant therapy is high. The general practitioner is the logical resource to fulfil the dental needs of the majority of these patients. ■

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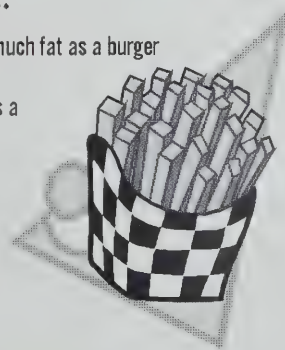
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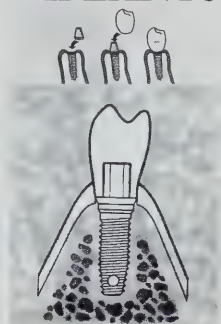
- A serving of fries has twice as much fat as a burger
- A taco salad in its fried shell has a whole day's worth of heart-unhealthy fat
- One taco salad in its fried shell has a whole day's worth of heart-unhealthy fat — and half of tomorrow's



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IMPLANTS



The Role Of the Restorative Dentist In the Diagnosis and Maintenance Phases Of Implant Therapy — Part II: Prosthetic Planning

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Introduction

Implant fixtures should be considered primarily as a means of providing support, retention and stability for fixed or removable prostheses. Prostheses must distribute functional forces within acceptable limits to ensure optimal function, while providing for esthetics, comfort and ease of maintenance. The objective of prosthetic planning is to determine viable treatment options for each patient so that they can make an informed decision as to their commitment to comprehensive treatment. Predictable restorative success depends on the achievement of specific treatment objectives (**Table I**).

A clinician can feel confident that the treatment objectives will be met when the method of restoration is carefully planned and analyzed during the diagnostic phase. As a guide to determining whether an implant restoration is a viable treatment option, the following prosthetic planning considerations are presented.

Prosthetic Planning Considerations

The support for a full-arch implant-supported mandibular prosthesis is well documented.¹⁻³ It is, however, prudent to consider the planning and design of fixed and removable implant restorations in

both the edentulous and partially edentulous patient, because restorations have been used successfully in both instances.⁴⁻⁸ In this paper, a fixed restoration is considered to be a restoration that the patient cannot remove, although it may or may not be removable by the clinician (i.e. screw-retained and cemented restorations). The removable restoration is a prosthesis that is implant retained and supported, but is removable by the patient (i.e. a complete or partial overdenture). In general, a fixed restoration may ideally offer an opportunity to restore function and esthetics to a level comparable to that of the natural dentition, and is therefore often considered to be the treatment of choice. There are indications for using a removable restoration (**Table II**).

The choice of either a fixed or removable restoration is therefore dependent on the functional requirements, the need to correct abutment malalignment for esthetics or hygiene, and the need to replace lost tissue support. To make these decisions logically, it is imperative that the clinician consider the following factors during the prosthetic planning of an implant restoration:

- Fixture number and position
- Prosthetic design
- Functional loading

Fixture Number and Position

The restorative dentist must determine the number and position of the endosseous fixtures prior to surgical consultation. The long-term success of an implant prosthesis depends on adequate fixture numbers and optimal fixture alignment. Measures to improve fixture position and numbers must be considered during the prosthetic planning phase. This is particularly true when the diagnostic work-up indicates that the consequences of tooth loss and subsequent resorption will impact negatively on esthetics, function or hygiene because there is inadequate bone to place sufficient fixtures or fixture position compromised.

In fact, the number and position of fixtures is a direct reflection of available bone quality and quantity. The routine use of a diagnostic wax-up to plan the definitive restoration will help optimize esthetics and functional loading by emphasizing correct fixture placement and the use of a sufficient number of fixtures. Inadequate planning may lead to undesirable results and the need to "salvage the case" with alternative components and techniques.

Prosthetic alternatives and restorative success also depend on anatomic location and the number of fixtures used. Fixture longevity has been correlated to anatomic



zones. The prognosis for fixtures placed in the anterior mandible is greater than for fixtures placed in the maxilla or posterior mandible. Furthermore, restorative success should exceed fixture success when multiple fixtures are used, as this allows for modification of the restoration if fixtures are lost.⁹ As a general guideline, planning the maximum number and size of fixtures for the given interfixture area increases the safety margin and ensures continued restoration longevity and serviceability.

Although it would seem logical to discuss fixture position when large edentulous spaces exist, it is also imperative to plan single tooth restorations adequately prior to surgery. Fixture position and alignment for a single-tooth restoration is critical and not always straight forward, because of anatomical constraints subsequent to ridge resorption. The prosthetic requirements for an esthetic single-tooth restoration may dictate surgical modification during the fixture and abutment placement stage. Provision for subgingival abutment placement, creation of normal emergence profile and restoration of awkwardly spaced dentitions all require planning prior to surgery (Figs. 1a and 1b). Guidelines for planning restorations based on fixture numbers and an assessment of optimal fixture positioning are outlined in Table III.

Prostheses Design

Restoration of an edentulous arch takes two main forms: a screw-retained prosthesis consisting of a metal substructure that supports denture teeth and resin, or porcelain; or a removable overdenture supported and retained by varied attachment mechanisms. In the partially-edentulous arch, multiple-unit restorations may be fabricated that are either entirely implant supported, or connected to natural teeth via mechanical interlocks or cemented copings. Clinical and theoretical data indicates that it is feasible to connect an implant restoration to natural teeth.¹⁰⁻¹² However, an implant-borne restoration has the advantage of retrievability for maintenance and alteration.

Table I

Treatment Objectives

1. The proposed treatment addresses and meets patient expectations in the areas of esthetics, function and phonetics.
2. The benefit(s) derived from the treatment justify exposing the patient to the potential risks associated with the treatment.
3. The proposed treatment is practical, economical and available to the patient.

Table II

Indications For a Removable Implant Prosthesis

1. Ridge resorption or anatomy precludes placement of a sufficient number of fixtures.
2. Unfavorable arch relationship, anatomy or resorption prevents optimum fixture positioning.
3. Patient compliance or dexterity is a concern.
4. Finances are the primary consideration.

Multiple-unit restorations attached to implant fixtures may be detachable (screw retained) or non-detachable (cement retained). An alternative method for the restoration of large edentulous segments, when insufficient fixtures are present, consists of a partial overdenture.

Design must be considered to address the fabrication and serviceability of the restoration. Restorations may incorporate materials and techniques common to conventional prosthodontics, or they may require specialized techniques and alternative components that increase laboratory complexity and cost. Consideration must also be given to the maintenance and future replacement of components or restorations during the life of the prosthesis. For example, the high initial costs incurred in the fabrication of metal substructures must be weighed against the lower initial costs of an acrylic prosthesis that may, however, require future and ongoing expenditures for attachment replacement and maintenance. The life expectancy of a thoughtfully planned restoration should be considerable, and the cost of maintaining its serviceability must be relayed to the patient prior to the initiation of treatment.

Prosthetic design must also address the anticipated functional forces that impact on the maintenance of osseointegration and restoration serviceability. A major concern is to ensure that the functional forces imparted to the fixtures are kept within acceptable limits. Predicting functional stress distribution, subsequent to restoration, requires an analysis of the existing occlusion, patient habits, parafunctional activity and an understanding of how fixture placement and prosthetic design affects functional loading (Fig. 2).

As way of example, the following design parameters are presented to illustrate how functional considerations reflect on prosthetic design.

Functional Loading

1. Fixture Placement

Fixtures should be planned and positioned along the curvature of the residual ridge when planning a full-arch fixed prosthesis, with an interfixture distance between the anterior and posterior fixtures of 10 mm to control tensional forces on the anterior segments when cantilever segments are subjected to loading.¹³ A removable prosthesis should be considered when the diagnostic wax-up indicates that, due



Fig. 1a: Implant abutment position.



Fig. 1b: Restoration in place.

to anatomic constraints, fixtures placed in the anterior mandible will lie in a straight line rather than follow a curve. Similarly, in the consideration of the fixture position for posterior fixed restorations, three fixtures placed in an offset arrangement to control undesirable bending movements are preferred.¹⁶

2. Cantilever Length and Occlusal Table Width

The cantilever length (leverage arm) is thought to be a critical factor in determining the functional load generated.^{14,15} In effect, the recommended cantilever length,^{18,19} while empirical, will provide guidelines for planning the restoration during the diagnostic



Fig. 2: Example of a fractured fixed framework, patient has a history of bruxism.

wax-up stage. However, these guidelines will require modification when the anticipated forces generated by the patient are deemed excessive. When the need for treatment is directly related to the consequences of excessive patient-generated functional and parafunctional forces, parafunctional habits need to be controlled or modified prior to implant therapy.

The width of the occlusal table and direction of force are also important considerations when planning single- and multiple-unit fixed restorations.¹⁷ Axial forces can produce undesirable tensional forces when loading occurs "off the line" combining the fixtures in the restoration. Generally, the occlusal table should not be offset more than one abutment diameter,¹⁸ and the forces should be directed as close to the long axis of the fixture as possible.

3. Occlusal Considerations

It should be evident that a consideration of functional loading during prosthetic planning entails the design of a restoration and the

Table III

Planning Implant Restorations Based On Fixture Numbers

	Maxilla (No. of Fixtures)	Mandible (No. of Fixtures)
Edentulous Arch		
Fixed prosthesis	6-10	4-6
Removable prosthesis	2-6	2-4
Partially Edentulous Arch		
Fixed prosthesis — single tooth	1	1
Fixed prosthesis — multiple unit (implant supported)	2-3	2-3
Removable partial overdenture	2-4	2-4



development of an occlusion that will be stable and withstand the anticipated forces. The development of optimal occlusal relationship in the static and eccentric positions is given paramount importance in all aspects of restorative dentistry. A brief review of planning optimal occlusal relationships is presented below.

Static Occlusion

1. The posterior segments are developed to ensure simultaneous contact in maximum intercuspation at the established centric occlusion.

2. In the natural dentition, the anterior segments should provide contact in harmony with the posterior segments. When an implant restoration is present in the anterior segment of either arch, the static contact depends on the opposing arch. Simultaneous contact is provided with an opposing natural or rigid artificial dentition. However, no contact is suggested if an implant restoration opposes a tissue-born prosthesis in the opposing anterior segment.

3. Every attempt is made to direct forces down the long axis of the natural teeth and implant fixtures. Factors such as malocclusion, arch alignment and the length of the edentulous span will all affect the force direction. Forces directed toward the arch opposing the implant restoration must always be considered.

Eccentric Occlusal Relationships (Guidance)

There is little documented evidence to show that the direction of force on an implant fixture significantly affects the longevity of the restoration, and controversy exists over the use of the implant restoration to provide guidance in excursive positions. The decision to provide guidance via an implant restoration depends on the nature of the prosthesis and the opposing arch. If a rigid implant restoration is considered as if it were natural dentition, and all removable implant prosthesis as if they are conventional dentures, then suggested guidelines for eccentric relationships are:

a) For situations where a posterior segment of an arch is restored with a removable prosthesis, and no natural anterior guidance exists, a balanced occlusion is used.

b) Natural anterior guidance is maintained and preferred in the partially edentulous situation. Anterior guidance in the form of a group function is preferred when rigid implant restorations are placed in the anterior segment and are required to provide guidance.

c) Single implant-supported restorations should not contact in eccentric relationships nor provide guidance, if at all possible.

The emphasis should be on developing a stable occlusal relationship in both static and eccentric positions to protect and preserve the weaker segment or arch, and to provide optimum function. With planning, it is often possible to improve the implant restoration by altering or modifying the opposing segment or arch. Rather than compromising the restoration to accommodate a pre-existing unfavorable occlusion, it is far better to improve the existing occlusion prior to restoration.

Summary

Prosthetic planning is critical to the success of the diagnostic phase of implant therapy and is used to establish fixture numbers, position and the optimal occlusal scheme, based on the design of the definitive prosthesis. The prosthetic needs of the patient, anticipated functional and parafunctional forces, restoration fabrication and serviceability are all considered. A clear picture of the intended rehabilitation is provided to the surgical team and expedites the consultation between implant team members. Comprehensive diagnostic planning using mounted diagnostic casts and diagnostic wax-ups will provide definite parameters for fixture number, position and alignment, and permit the fabrication of radiographic and surgical templates as the treatment sequence progresses.

Patients need to be informed of the time and expense involved in the diagnostic phase of implant therapy prior to the initiation of the planning process. The practitioner

conducting the selection and planning phase is entitled and should expect financial remuneration commensurate with the time and effort required to achieve the objectives of this phase of implant therapy.

The Planning Process

Using mounted diagnostic casts and diagnostic wax-ups:

1. Establish fixture numbers and position;
2. Establish the optimal occlusal scheme;
3. Design the definitive prosthesis;
4. Fabricate a surgical template.

Design Principles — Summary

1. The location and number of fixtures dictates the prosthetic design and influences restorative success.
2. A restoration must be designed to distribute forces to the fixtures without overloading the bone, and therefore be able to withstand anticipated functional and parafunctional loading.
3. Design for optimal function and esthetics with a regard for patient comfort and maintenance. ■

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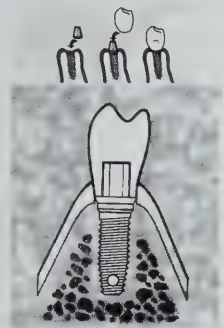
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IMPLANTS



The Role Of the Restorative Dentist In the Diagnosis and Maintenance Phases Of Implant Therapy — Part III: The Restoration and Maintenance Of Oral Health Prior To the Provision Of the Implant Prosthesis

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Introduction

The importance of the diagnostic phase of implant therapy has been emphasized, and planning considerations for designing implant restorations have been discussed in Part I and Part II of this paper. Thoughtful patient selection and prosthetic planning will culminate in the placement of endosseous fixtures that are conducive to restorative success. When active implant therapy is a reality, however, there is still a need and a responsibility for the dental team to provide the dental care necessary to restore and maintain oral health during the surgical and healing phases, prior to definitive reconstruction with the implant restoration.

Some attention has been given to the care required to maintain patient comfort and function prior to and subsequent to the provision of implant therapy.¹⁻⁴ Our experience would also support the need for emphasizing the maintenance requirements of the implant patient when the treatment time and ex-

penses associated with implant therapy are determined. As part of our goal of providing optimal implant therapy, we are recording, managing and monitoring the complications and maintenance requirements of an ongoing clinical implant study group.

The follow-up care associated with restoration serviceability and oral health maintenance will be reported on at a later date. At this time, however, we will present information pertaining to the maintenance of patient function and comfort prior to implant restoration. Our screening data indicated that there was a potential need for a significant amount of conventional dental care prior to considering implant therapy for many of the partially edentulous patients (Part I). Similarly, our experience in treating implant patients indicates that they all require care and monitoring during the surgery and healing phase of implant therapy. Furthermore, there is also a requirement to provide additional conventional dental treatment in conjunction

with the provision of implant restorations.

A retrospective study was conducted to determine the maintenance requirements and amount of conventional dentistry required to fulfil the desired treatment objectives of our implant study group. The dental care recorded was not directly associated with the provision or maintenance of implant fixtures or restorations, but was required to restore and maintain the oral health of the patients in conjunction with our provision of implant therapy.

Methods and Materials

Patient care, with the exception of surgery, was provided primarily by two prosthodontists and the dental hygienist involved in the implant study. Information recorded in a standardized dental chart at the time of treatment delivery was reviewed to document the maintenance and restorative requirements of this implant study group (N=90). Records were reviewed and data tabulated by one team member and then reviewed for ac-

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**Table I****Maintenance Requirements**

	No. of Patients	Direct Soft Reline	Adjustment	Repairs
Edentulous	34 (37.7%)	129 (79.1%)	70 (63.1%)	13 (39.4%)
Partially Edentulous	56 (62.3%)	34 (20.9%)	41 (36.9%)	20 (60.6%)
Total	90	163	111	33

curacy by two additional team members. The information that was tabulated included:

- the number of direct soft relines using tissue conditioning material (COE Comfort, GC Group);
- the number of denture adjustments and repairs;
- the number of conventional dentures and fixed restorations provided in addition to the implant restorations;
- the number and nature of the oral hygiene sessions provided to each patient.

The study group was subdivided into edentulous and partially edentulous patients so that the maintenance requirements and dental care provided to these two groups could be compared and analyzed.

Results**Maintenance Requirements**

The implant study group was made up of 34 edentulous and 56 partially edentulous patients. The number of direct soft relines, adjustments and repairs for each group is outlined in **Table I**. The majority of soft relines, approximately 80 per cent, were required by the edentulous patient subgroup. All edentulous patients required at least one soft reline subsequent to stage II surgery, with 19 patients receiving five or more direct soft relines in association with the need to provide postsurgical denture stability and comfort. In all, 111 denture adjustments and

33 denture repairs were provided to the study group, with more adjustments but less repairs being provided to the edentulous patient, on average.

Provision of Dental Treatment

Table II outlines the conventional dental treatment that was provided to patients in addition to definitive implant restorations. Twenty-six complete dentures, three partial dentures and 17 fixed restorations were fabricated. The oral hygiene sessions from the time of initial patient examinations to delivery of the definitive prostheses are summarized in **Table II** and analyzed in terms of hygiene hours in **Table III**. A total of 135 hours were required to provide hygiene services to the implant study group.

Discussion

Individual patient treatment requirements dictate the time and nature of the dental procedures necessary to maintain patient comfort and function prior to final definitive implant restoration. The results presented in this clinical implant study are applicable to patient treatment in the private practice setting, and the procedures used in the study are adhered to in our individual private practices.

The Edentulous Patient

Approximately two to three chairside hours were spent with each patient to maintain prosthesis serviceability and patient comfort, from the time of stage I surgery to

delivery of the implant restoration. Treatment was provided based on the patient's request for service, and was in line with our standard private practice protocol. More than 50 per cent of the patients required ongoing care through the provision of denture adjustments and direct soft relines with tissue conditioner. The number of direct relines and adjustments reflect the fact that the majority of the patients were dissatisfied with conventional denture wear prior to their inclusion in the study.

In addition to routine maintenance procedures, there was additional time and expense involved in repairing fractured dentures. Fracture of the mandibular denture, subsequent to alteration to accommodate the healing abutments after stage II surgery, occurred in 10 patients, approximately one-third of the edentulous study group.

Providing a conventional denture to oppose the implant-supported and retained prosthesis is our standard practice. This conventional prosthesis demands additional chairside time and expense, moreover, it requires as much consideration as the implant prosthesis. Total patient care must address the patient's expectations in terms of function, comfort and esthetics. If providing the conventional denture is regarded as being incidental to the fabrication of the implant prosthesis, overall patient satisfaction and restorative success is put at risk.

Table II**Conventional Treatment Provided**

	No. of Patients	Oral Hygiene Sessions	Conventional Denture	Fixed Restorations
Edentulous	34	102 (37.7%)	26 (89.6%)	0
Partially Edentulous	56	168 (62.3%)	3 (9.4%)	17
Total	90	270	29	33



Table III
Oral Hygiene Treatment and Time

	No. of Patients	Oral Hygiene (Hours)	Prophylaxis
Edentulous	34	42.5 (60.3%)	8.5 (13.2%)
Partially Edentulous	56	28 (39.7%)	56 (86.8%)
Total	90	70.5	64.5

The Partially Edentulous Patient

Fewer partially edentulous patients required dental care than edentulous patients. In fact, 27 per cent required no additional dental restorations or prosthetic maintenance, although they all received hygiene treatment. This is explained by our screening criteria, which excluded patients requiring excessive conventional dental treatment. The partially edentulous patients who had existing partial dentures showed a similar requirement for maintenance as the edentulous patients in terms of the provision of direct soft relines, adjustments and repairs to their existing partial denture. Denture repairs were required by 19 patients (30 per cent) and were associated with the fracture of the denture base acrylic following alteration to accommodate the healing abutments.

Oral Hygiene Requirements

The number of hygiene sessions and hours spent performing dental hygiene duties is outlined in **Tables II and III**. Edentulous patients received, on average, 1.5 hours each of oral hygiene instruction, review and technique modification, which included the removal of calculus from healing abutments. Partially edentulous patients similarly received, on average, 1.5 hours each of hygiene treatment, with one hour devoted to prophylaxis prior to surgery and one-half hour spent on periodontal assessment, oral hygiene instruction, review and technique modification.

Less time was required to review and modify the oral hygiene technique of partially edentulous patients following stage II surgery than for the edentulous patients,

who posed somewhat of a greater challenge from an oral hygiene perspective. Oral hygiene instruction prior to the delivery of the implant restoration was kept simple, with a focus on slow behavioral changes and positive feedback. It was felt essential to establish pre-surgical oral health and compliance levels in all patients by introducing, reinforcing and monitoring oral hygiene from the onset of treatment.

Summary

Establishing and maintaining the patient's oral health prior to provision of the definitive implant restoration is the responsibility of the restorative dentist and is an important aspect of comprehensive treatment. The additional time and expense required to provide oral hygiene and conventional dental treatment needs to be acknowledged by the implant team and the patient. An anticipated three to five treatment hours are often required to provide maintenance and hygiene care, with additional time needed to provide individualized conventional dental treatment to each patient. The provision of implant therapy is a rewarding experience when all aspects of treat-

ment are properly planned and competently performed. The general practitioner is the logical resource to provide much of the necessary treatment that is directly and indirectly related to the provision of implant restorative dentistry. ■

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DID YOU KNOW?

Serendipity — Microwave Cooking

Shortly after The Second World War Percy L. Spencer, electronic genius and war hero, was touring one of his laboratories at the Raytheon Company. Spencer stopped in front of a magnetron, to examine the power tube that drives a radar set. Suddenly he noticed that the candy in his pocket had begun to melt.

Spencer held the bag of candy closer to the magnetron and watched in amazement as the unpopped kernels in the candy began to explode.

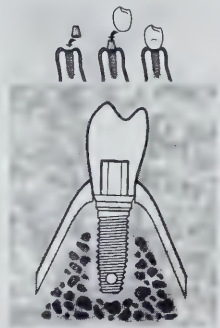
Eureka, microwave cooking.



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IMPLANTS



A Progressive Treatment Protocol For Maintaining Tissue Associated With Implants

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ABSTRACT

This article presents a protocol for the management of the soft and hard tissues surrounding implant-supported prostheses. Treatment requires an evaluation of soft tissues as well as a radiographic interpretation of the hard tissues associated with peri-implant degeneration. As the degree of soft and hard tissue degeneration increases, treatment must become more aggressive. A classification is outlined for diagnostic criteria and appropriate treatment.

SOMMAIRE

Dans cet article, on présente un protocole pour la gestion des tissus mous et durs qui entourent les implants servant à fixer des prothèses. Pour le traitement, il faut une évaluation des tissus mous ainsi qu'une interprétation par radiographie des tissus durs associés à la dégénérescence péri implantaire. Plus la dégénérescence des tissus mous et durs est avancée, plus le traitement doit être agressif. On donne une classification touchant les critères de diagnostic et le traitement approprié.

Introduction

The increased use of dental implants in recent years has created an obvious and growing need to maintain the soft and hard tissues associated with them.

In fact, the percentage of failed implants varies from three per cent in Class I, II and III type bone¹ to as high as 35 per cent in Class IV bone.¹ And although the percentage of ailing and/or failing implants has been poorly documented, Solomen⁶ reported maintenance procedures requiring surgical intervention in six to 48 per cent of patients over five years, depending on the implant system used. The percentage of implants classified as ailing but not requiring surgical intervention is also poorly documented.

Guidelines on how to manage ailing or failing implants would be helpful for practitioners, who must identify varying degrees of soft tissue reactions, mucogingival involvement and hard tissue destruction to select the appropriate treatment. Based on this need, a "Progressive Treatment Protocol" is presented.

Etiology

It's essential for the practitioner to identify and eliminate the origin of breakdown in the hard and soft tissue surrounding an implant. This



Fig. 1: Abscess formation involving tissues of labial sulcus. Example of Stage II diagnosis.



Fig. 2: Unstable and mobile gingival tissue surrounding implants. Example of Stage III diagnosis.



Fig. 3: Cravicular depth greater than 4.0 mm. Example of Stage III diagnosis.

allows stabilization, ongoing maintenance and the long-term function of implant-supported prostheses.

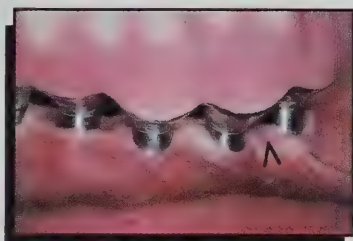


Fig. 4: Soft tissue resolution of Stage III diagnostic example, as seen in Fig. 2, by Stage III treatment procedures.



Fig. 6: Surgical exposure of bony defect, as seen in Fig. 5.

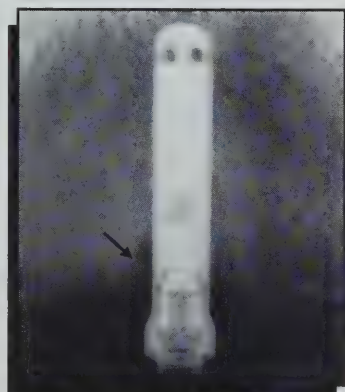


Fig. 5: Radiographic example of Stage IV diagnosis and bony defect.

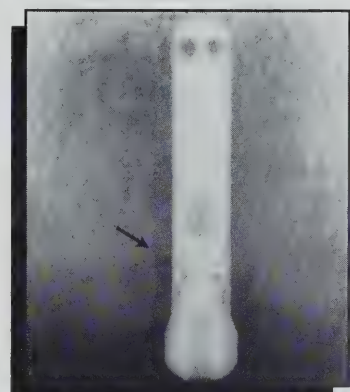


Fig. 7: Radiograph of bony defect, as seen in Figs. 5 & 6. Surgical intervention using regenerative techniques, 12-months post-surgical intervention.

The etiology of breakdown may be classified as follows:

1. Bacterial
2. Occlusal
3. Combination of 1 and 2
4. Other (i.e. allergic response or drug-induced reactions)

Diagnosis

A diagnosis is established based on etiology, clinical findings and radiographic observations of peri-implant tissues. Depending on the severity of involvement, diagnostic Stages I, II, III, IV and V are identified:

- Stage I: Stable implant and healthy peri-implant tissues.
- Stage II: Minor soft tissue reactions (**Fig. 1**). These include:
 1. No evidence of soft tissue pathology.
 2. Bleeding on probing.^{2,8-9,12}
 3. Purulence on palpation of gingival margin or probing.^{2,9}
 4. Hyperplasia.^{2,10}
 5. Peri-implant abscess.

- Stage III: Soft tissue reaction and deficiencies with 3.0 mm or less of progressive bone loss. Soft tissue deficiencies may include:
 1. Unstable or mobile gingiva surrounding an implant (**Fig. 2**).⁴
 2. Non-keratinized surface of gingival margin.⁴
 3. Crevice depth greater than 4.0 mm (**Fig. 3**).^{9,14}
 4. Inadequate vestibular depth.
- Stage IV: Soft tissue reaction and deficiencies with greater than 3.0 mm of progressive bone loss.
- Stage V: Mobile implant.

Treatment

The maintenance of implants and implant-supported prostheses is the long-term objective when dental implant rehabilitation techniques are used.

Progressive treatment implies the application of minor treatment procedures to resolve the initial stages of tissue reaction or destruction (i.e. diagnostic Stage I and Stage II). More aggressive treatment is required as the severity of the

degeneration increases (diagnostic Stage III, Stage IV, and Stage V). The long-term objective is to maintain a functional implant supporting a prosthesis surrounded by healthy peri-implant tissues.

Early recognition of degeneration etiology and the prompt initiation of appropriate treatment is essential, and will assist the practitioner in providing a favorable long-term result. Peri-implant bone loss indicates a compromised implant and a need for extensive revision, which may include regeneration techniques.

Progressive Treatment Protocol

Treatment protocols are described for diagnostic Stages I through V:

- Stage I: Recall appointments require debridement, plaque and calculus removal, with polishing of all surfaces.^{11,13} These are routine local procedures.
- Stage II: Soft tissue manifestations treated by local procedures, which can include debridement, oral hygiene instruction, use of surface agents,¹⁷ antibiotics^{15,16} and occlusal control.³
- Stage III: Soft and/or hard tissue manifestations treated by local procedures and surgical correction. Surgical correction may include mucogingival stabilization,^{4,5,20} and/or pocket elimination procedures (**Fig. 4**).⁴
- Stage IV: Soft and hard tissue clinical manifestations with progressive bone loss. Treatment is accomplished by local and regenerative procedures (**Figs. 5, 6 & 7**).^{6,7,18,19}
- Stage V: Removal of implant.

Summary

The diagnosis of etiological factors is the key to the treatment of peri-implant tissues demonstrating some degree of degeneration. Based on clinical and radiographic findings, a classification for diagnosis has been presented. A progressive treatment protocol has been described, based on the classification of etiologic criteria. An increase in the severity of treatment to manage the increased pro-



gression of degeneration associated with peri-implant tissues is also outlined. ■

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DID YOU KNOW?

Top ten killers

Number of deaths in 1991 per 100,000 people:

- ✓ Heart disease 286
- ✓ Cancer 204
- ✓ Stroke 67
- ✓ Lung diseases 36
- ✓ Accidents (non-auto) 35
- ✓ Pneumonia, flu 31
- ✓ Diabetes 19
- ✓ Suicide 12
- ✓ AIDS 12
- ✓ Homicide 10

(Source: National Center for Health Statistics)



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TABLE 1

Dosage in capsules of Rovamycin '250'	
Body weight	(750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycin '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycin '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

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The Use Of Epinephrine In Dentistry

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ABSTRACT

This paper reviews the physiological effects, pharmacological actions and drug interactions of epinephrine in dentistry.

SOMMAIRE

Dans cet article, on présente un compte rendu sur les effets physiologiques, l'action pharmacologique et l'interaction medicamentuse de l'épinephrine en dentisterie.

Introduction

Epinephrine holds a unique position in dentistry. It is the only substance to occur naturally in humans that is also routinely used for its pharmacologic effect.

In dentistry, Epinephrine is administered for its local vascular effect, but unanticipated or undesired systemic responses can be of concern, particularly in the elderly or medically-compromised patient. The purpose of this review is to discuss the various systemic actions of epinephrine and their incidence and significance during dental treatment.

Physiologic Actions

Epinephrine is one of three naturally-occurring catecholamines (the others are norepinephrine and dopamine). Primarily synthesized in the adrenal medulla, it is important for homeostasis as well as in

the primitive defensive action of "fight or flight."

The responses to epinephrine are normally divided into alpha and beta adrenergic properties corresponding to the two major functional types of post-synaptic catecholamine receptors. A further division into sub-types occurs with two alpha receptors (α_1 and α_2) and three beta receptors (β_1 , β_2 and β_3). Different catecholamines differ in their alpha and beta activity, but epinephrine has the most potent action, and is considered the prototypical catecholamine (Table I).

Epinephrine has broad physiologic actions, including effects on the heart, lungs, vascular system, metabolism, cell membrane function and wound healing. Most clinicians, however, are primarily concerned with its vasoconstrictor properties, especially when it is used with local anesthesia and on rare occasions as an emergency drug. However, because of epinephrine's potency and physiologic importance, drug interactions must also be considered.

Cardiac Effects

Epinephrine produces cardiac effects both by direct action and indirectly during metabolic change. The principal effect on the heart is to increase the force and rate of contraction. This is a β_1 effect, and the resulting rise in cardiac output leads to a transient rise in the systolic blood pressure. Also, to accommodate increased myo-

cardial work, coronary artery flow is increased as a result of β_2 receptor activity.

Some authors believe that the amount of epinephrine injected during local anesthesia has little effect on the heart.¹ However, clinically common doses of epinephrine-containing local anesthetics have been shown to increase both cardiac output and stroke volume.²⁻⁴ Recommendations for the maximum dose of epinephrine that should be administered during dental treatment range from 0.2 mg (20 mL of a 1:100,000 solution) in a healthy adult⁵ to 0.04 mg (4.0 mL of a 1:100,000 solution) in a patient with significant cardiovascular impairment.⁶ However, recent recommendations from the American Heart Association simply conclude that "the minimum possible amount of vasoconstrictor should be used."⁷ In this regard, some workers believe that cardiac disorders such as unstable angina, recent myocardial infarct and refractory arrhythmias are absolute contraindications to the use of epinephrine-containing anesthetics.⁸

Large amounts of epinephrine can produce ventricular fibrillation. Piscatelli and Fox⁹ reported that high doses of epinephrine produced myocardial injury, while smaller doses similar to those injected during local anesthesia have been shown to produce changes in the ECG.¹⁰

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Table 1
Relative Potency and Selectivity of Different Catecholamines*

Catecholamine	Relative Potency	Relative Selectivity	
		Alpha	Beta
Epinephrine	100	50	50
Nor-Epinephrine	25	90	10
Levo-Nordefrin*	15	75	25

*Synthetic catecholamine.

Vascular Effects

Increased concentrations of epinephrine cause diastolic blood pressure to fall as a response to the beta-modulated vasodilatation of skeletal muscle vessels. This is a contributory mechanism during episodes of patient fainting in the dental office. In effect, because the large skeletal muscles do not contract, the volume of blood distributed to muscle in preparation for "fight or flight" is not returned to the brain. Reductions in diastolic blood pressure can be detected when clinical doses of epinephrine-containing local anesthetic solutions are administered to volunteers and to patients having third molar surgery, while systolic pressure remains unchanged.^{11,12} However, systolic blood pressure will rise when large doses are used.

The alpha receptor effect of vasoconstriction is best seen in skin and mucous membranes.

Pulmonary Effects

Constricted bronchioles relax under the influence of epinephrine. This is a beta₂ action that is put to good effect when epinephrine is used as an emergency drug. The influence of "dental doses" on pulmonary function has received relatively little attention, however. Meehan et al^{13,14} noted an effect on end tidal CO₂ — and therefore bronchial patency — that was attributable to the intraoral injection of 50 µg epinephrine in patients having third molar teeth removed under general anesthesia.

Metabolic Effects

Epinephrine influences both the metabolic rate and the homeostatic control of several plasma components,¹⁴ including glucose, potassium, phosphate and magnesium.

Its metabolic action is considerably more potent than norepinephrine's.¹⁵

The hyperglycemic effect of epinephrine is complex. It is a result of glycogenolysis and gluconeogenesis in the liver, glycogenolysis and lactate mobilization in muscle, release of glycerol from adipose tissue, inhibition of insulin release and alteration in splanchnic blood flow.¹⁶⁻¹⁹ The threshold for a rise in glucose levels requires a five-fold increase in resting epinephrine concentration.¹⁴ Increased serum glucose due to the administration of exogenous epinephrine in local anesthetic solutions has been reported in healthy volunteers as well as in patients undergoing oral surgery.²⁰ This effect appears to be of little concern in healthy individuals, however, its occurrence and significance in diabetic patients has not been investigated.

Potassium homeostasis is also influenced by adrenergic activity. An increase in epinephrine concentration results in a transient rise in serum potassium (an alpha adrenergic effect), which is followed by a longer-lasting hypokalemia.^{10,21} This hypokalemic phase is a beta₂ action²² due to the activation of a membrane-bound sodium/potassium pump that transports potassium intracellularly.²³ Such changes in potassium are capable of altering electrical conduction in the heart, such as a reduction in T wave amplitude.¹⁰ It has been suggested that humans are more susceptible to this hypokalemic effect than other species.²⁴ It has also been demonstrated that there is sufficient epinephrine in many local anesthetic solutions to produce such changes in serum potassium levels and the resulting reductions in T wave amplitudes.^{11,25}

The shifts in potassium that occur after using local anesthesia in healthy volunteers are generally small. However, some believe that even mild reductions in serum potassium increase the risk of fatal ventricular arrhythmias.^{26,27} In patients with pre-existing potassium depletion, small reductions in potassium can be potentially dangerous.²⁸ Also, hypokalemia exacerbates digitalis-induced arrhythmias.²⁹

Recently, considerable attention has been paid to the effects of epinephrine on serum magnesium. Hypomagnesemia occurs with increased concentrations of epinephrine, similar to those found after myocardial infarction.³⁰ It appears that the effect of elevated epinephrine concentrations on magnesium is similar to the effect on potassium, thus an early rise^{31,32} is followed by a fall.^{32,33} Also, it has been suggested that decreased magnesium concentrations lead to the occurrence of cardiac arrhythmias and coronary vessel constriction,^{33,34} but this has never been demonstrated as a result of oral anesthesia.

Yet another area of interest is epinephrine's relationship to phosphate, as Body et al³¹ have reported that epinephrine has a very sensitive hypophosphatemic effect. The importance of this in man, however, has yet to be postulated.

Membrane Effects

Catecholamines in general, and epinephrine specifically, activate a membrane-bound sodium/potassium pump via beta₂ adrenergic action. This effect produces increased polarization in cell membranes of skeletal muscle,³⁵ smooth muscle,³⁶ and cardiac muscle,³⁷ as well as in nerves.³⁸ A hyperpolarization of nerve cell membranes

Table II
Epinephrine Concentrations and Doses*

Epinephrine Concentration (µg/liter)	Circumstance
0.027	Before dental local anesthesia ⁶⁴
0.034	Before third molar surgery ⁶⁵
0.144	Before third molar surgery ⁶²
0.860	"Phobic" dental patients during local anesthesia ⁶¹
Amount of Epinephrine (µg)	Cartridge Type (Volume and Epinephrine Concentration)
18.0	1.8mL 1:100,000 (N. America)**
27.5	2.2mL 1:80,000 (U.K.)†
Amount of Epinephrine (µg)	Emergency Drug (Volume and Epinephrine Concentration)
500	0.5 mL 1:1,000
1,000	10 mL 1:10,000

*The maximum recommended "dental" dose in a healthy adult is 200µg.

**Maximum dose approximately 11 cartridges in a healthy adult.

†Maximum dose approximately 7 cartridges in a healthy adult.

may aid analgesia. Interestingly, in this regard, Collins et al³⁹ demonstrated that spinal administration of epinephrine in cats produced an analgesic effect. However, epinephrine-induced hyperpolarization is transient^{40,41} and probably does not increase the potency of local anesthetics, as incorporation of beta₂ agonists into such solutions does not produce an increase in anesthetic efficacy.⁴²

Wound Healing

Epinephrine appears to interfere with wound healing by reducing tissue oxygen tension and increasing fibrinolysis. Several authors have noted mucoperiosteal tissue ischemia and hypoxia,⁴³ followed by poor wound healing, subsequent to the use of epinephrine-containing local anesthesia in the surgical excision of third molars.⁴⁴

Slow intravenous infusions of 62.5 - 250 µg epinephrine have been reported to increase fibrinolytic activity.⁴⁵ However, other workers have reported decreased fibrinolytic activity in patients receiving two-per-cent lidocaine

containing 1:100,000 epinephrine.⁴⁶ In this instance, fibrinolysis was measured before surgery and then again 68 minutes afterwards. This author's conclusion — that lidocaine may benefit wound healing by decreasing fibrinolysis, thereby counteracting the effect of epinephrine — could be true. However, it should be noted that the biochemical effects of epinephrine peak in 10 minutes.^{11,20,25} Thus, if epinephrine does exert a significant fibrinolytic effect, it would likely occur early in the surgical procedure, during the initial clot formation, and not one hour or so later. In this regard, it is known that early degradation of the fibrin network interferes with the stability of the final clot.⁴⁷ Furthermore, the incidence of alveolar osteitis (dry socket) following dental extractions is significantly higher in patients receiving local anesthetics containing epinephrine than it is in those given epinephrine-free anesthetics.⁴⁸ It remains to be proven whether the cause of dry socket is actually epinephrine-induced fibrinolysis.

Pharmacological Uses

The principal clinical uses of epinephrine include local vasoconstriction, which is used to treat life-threatening allergic reactions and during cardiac arrest.

Vasoconstriction

Epinephrine's hemostatic action is of great benefit to dentistry, and is used in both topical applications and during the injection of local anesthetics.

Retraction cord impregnated with epinephrine is used to reduce gingival bleeding during restorative procedures involving the cervical margins of teeth. Such cords contain an eight per cent solution, and produce effective vasoconstriction with no irreversible local damage.^{49,50} However, a significant systemic absorption of the catecholamine occurs.^{51,52}

Donovan et al⁵³ found that epinephrine-containing cords were most popular among the North American dentists they surveyed, but suggested that epinephrine-free cords are equally effective and produce no systemic effects. Similarly, Malamed⁵ suggests that epinephrine-containing cords should not be used. Others state that epinephrine-impregnated cords are the materials of choice for healthy patients.⁵⁴ It is still best to avoid epinephrine-containing cords in patients who are compromised cardiovascularly, however.⁸

The use of epinephrine-containing local anesthetics reduces operative hemorrhage during periodontal and oral surgical procedures, compared to the injection of epinephrine-free solutions.^{44,55} Nevertheless, postoperative blood loss has been reported to be greater following the use of epinephrine-containing solutions. Sveen⁴⁴ reported that 13 out of 16 patients receiving an epinephrine-containing anesthetic for third molar surgery experienced bleeding more than six hours postoperatively, while none of the 16 individuals who were injected with a plain solution had this problem. Most likely, this delayed hemorrhage is related to a beta₂ response that outlasts epinephrine's alpha activity.



Local Anesthetic: Vasoconstrictor Combinations

Epinephrine was originally added to local anesthetic solutions in order to reduce the systemic uptake and limit anesthetic toxicity. Although the ability of epinephrine to reduce entry of the anesthetic into the systemic circulation is not impressive,^{56,57} the addition of a catecholamine to local anesthetic solutions does offer a number of advantages. In addition to providing hemostasis for surgical procedures, there is decreased onset as well as increased potency and duration of anesthetic action.^{2,43,58-60}

It has already been mentioned that cardiovascular and metabolic changes have been detected in patients receiving epinephrine-containing local anesthetic solutions. This is not surprising, as the amount of epinephrine contained in a 1.8 mL cartridge of a 1:100,000 solution (18 µg) is large compared to circulating epinephrine levels, even in anxious dental phobics (or 0.86 µg/161) (Table II). This large dose of the catecholamine should not be administered as an intravascular bolus, and thus routine aspiration during local anesthetic injection is essential.

Despite its vasoconstrictive effect, epinephrine enters the circulation rapidly following intraoral injections.⁶²⁻⁶⁵ For example, a significant rise in arterial epinephrine concentration occurs three minutes following intraoral infiltrations of 18 µg adrenaline contained in lidocaine local anesthetics (1.8 mL of 1:100,000 solution).⁶²

The concentration of epinephrine contained in local anesthetic cartridges varies. Although a 1:100,000 solution is most common in North America, 1:80,000 is the routine concentration of epinephrine found in dental cartridges in the U.K., where larger cartridges are used (2.2 mL compared to 1.8 mL).

In fact, the optimum concentration of epinephrine for dental local anesthetic cartridges has never been established. The majority of the evidence suggests that a low concentration of the vasoconstrictor (1:300,000) produces similar depth and duration of anesthesia as

1:50,000 or 1:100,000 solutions.^{66,67} On the other hand, Cowan⁶⁸ reported an increased duration of anesthesia with 1:100,000 epinephrine solution compared to 1:200,000 solution when a minimum dosage technique was used. Similarly, Kim⁶⁹ showed that during intraligamental anesthesia, a two per cent lidocaine solution containing 1:50,000 epinephrine was significantly more effective than a similar anesthetic with 1:100,000 epinephrine.

Here, the delivery of epinephrine via the periodontal ligament merits comment. Periodontal ligament administration is an intra-osseous injection.⁷⁰ It has been suggested that intra-osseous injections produce circulating drug levels identical to intravenous administration,⁷¹ although a recent clinical investigation of periodontal ligament injections questions this finding.⁷² Thus, some workers suggest that intraligamental injections of epinephrine should be avoided in patients with cardiovascular disease.⁷³

Knoll-Kohler et al⁷⁴ have shown that there is a significant difference between the circulating plasma levels of epinephrine in patients receiving local anesthetics containing 1:100,000 and 1:200,000 epinephrine. However, they also found that surgery (third molar tooth removal) was a stressful event when the 1:200,000 solution was used, whereas there were no biochemical changes attributable to stress when the 1:100,000 epinephrine solution was injected. They suggest that the risk of inducing a cardiovascular incident during oral surgery seems to be higher when a low concentration of epinephrine is used.

As far as hemostasis is concerned, concentrations of epinephrine in the range 1:50,000 to 1:200,000 have similar effects on reducing blood flow.⁷⁵ There is some evidence that 1:50,000 epinephrine is more effective in reducing blood loss during periodontal surgery than a 1:100,000 solution.⁷⁶ However, this strength of epinephrine cannot be recommended due to the increased risk of inducing systemic toxicity.

In summary, it appears that there is little evidence to commend the use of concentrations of epinephrine greater than 1:200,000 for routine dental treatment when using conventional anesthetic techniques.

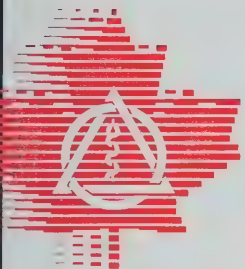
Emergency Use of Epinephrine

Epinephrine is the drug of choice in the treatment of anaphylactic shock. Other medications such as corticosteroids or antihistamines may play supportive roles, but epinephrine is the most important as it is the physiological antagonist of the chemical mediators of anaphylaxis. Treatment is by the parenteral injection of 0.2 - 0.5 mg (1/1,000 solution), which can be repeated at five-minute intervals.

Angio-edema is a rare but potentially life-threatening reaction when it involves the larynx or floor of mouth, and should also be treated with parenteral epinephrine.

When used as an emergency drug, epinephrine is injected in much larger amounts than during routine dental use and such doses can produce dramatic and occasionally life-threatening cardiovascular effects. For example, Ferry et al⁷⁷ reported a case of acute myocardial infarction following the subcutaneous administration of 600 µg over 80 minutes to treat an allergic reaction to amoxicillin. Similarly, Jastak and Pallasch⁷⁸ reported a death following a mild overdose with chloral hydrate, which they speculated may have been caused by an emergency administration of epinephrine precipitating a fatal cardiac arrest following myocardial sensitisation by the sedative. Thus, while epinephrine is a life-saving agent in selected emergencies, care must be exercised in the amount that is administered to the patient.

Intravenous adrenaline may be used during advanced life support to treat ventricular fibrillation, asystole and electromechanical dissociation. When used via this route, five to 10 mL of a 1/10,000 solution of epinephrine is injected at five-minute intervals; alternatively, 10 mL can be administered via an endotracheal tube.



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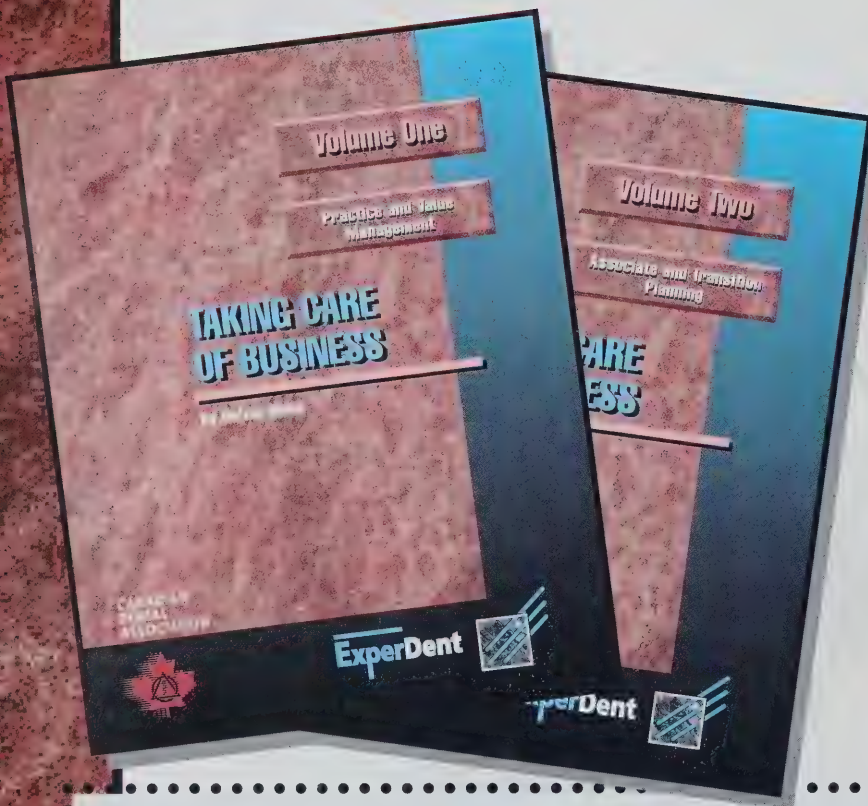
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Drug Interactions

It has been claimed that a number of drugs interact with epinephrine. However, it must be pointed out that many of the effects are theoretical, and only become apparent at non-clinical doses of either the catecholamine or the prescribed drug.

Drug interactions can be desirable or undesirable, and examples of both can be found in the interaction between lidocaine and epinephrine. For example, epinephrine improves the quality of anesthesia that is produced by lidocaine, which is a desirable interaction. The counterpoint is that the vasodilatory action of lidocaine accelerates the absorption of the

catecholamine from the site of injection, increasing the systemic activity of the vasoconstrictor.^{79,80}

It is probably also beneficial that lidocaine and epinephrine have opposite effects on the stability of the myocardium — the local anesthetic exerts a stabilizing influence, while the vasoconstrictor has an arrhythmogenic potential.

Nevertheless, a number of drugs have been implicated in undesirable interactions that can pose serious unexpected risks in selected patients.

Antidepressant Agents

Although claimed by some to have potential for interaction, antidepressant drugs that act via

monoamineoxidase (MAO) inhibition (for example tranylcypromine) do not interfere with the metabolism of exogenously-administered epinephrine, as it is predominantly metabolized by catecholamine methyl transferase (COMT). Thus, the use of moderate amounts of local anesthesia containing epinephrine is not contraindicated in patients taking MAO inhibitors. However, it should be mentioned that some texts still list the use of epinephrine as a contraindication when MAO inhibitors are being taken.⁸¹

Tricyclic antidepressants, on the other hand, can pose a problem. These drugs are thought to exert their antidepressant activity by in-

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terfering with re-uptake of norepinephrine and 5 hydroxytryptamine into presynaptic neurones. This permits these catecholamines to "linger" and exert an increased stimulatory effect. When exogenous epinephrine is added, pressor effects can be magnified two or threefold.² While these findings do not contraindicate the use of epinephrine-containing local anesthetics, they have led to recommendations to limit the total dose administered to such patients to 50 µg (2.8 cartridges of two-per-cent lidocaine with 1:100,000 epinephrine).⁸²

Antipsychotics

Phenothiazines can produce blockade of alpha adrenergic receptors, which means that the beta adrenergic effect of epinephrine will not be moderated by the alpha effect. The result can be hypotension,⁸³ although this problem does not appear to be a common occurrence in practice.

Beta-Adrenergic Blockers

Because of the unopposed alpha adrenergic action of catecholamines induced by beta-blockade, patients may be at considerable risk for hypertensive crisis when large doses of epinephrine are administered.⁸⁴ This effect may be considered opposite to the alpha adrenergic blockade seen with phenothiazines.

Antihypertensives

Patients receiving non-potassium sparing diuretics have an increased response to the hypokalemic effect of epinephrine.⁸⁵ This effect has been demonstrated in dental patients who have received clinical doses of epinephrine-containing local anesthetics.⁸⁶ It is also one of the few drug interactions attributable to epinephrine that has been demonstrated in individuals taking therapeutic doses. As patients taking these drugs may be potassium-depleted or concurrently receiving digoxin, this might be a cause for concern.

Thyroid and Adrenal Hormones

Thyroid hormones and epinephrine have many physiologic actions

in common, and thyroxine increases the toxicity of epinephrine.⁸⁷ Patients who have acute thyrotoxicosis (hyperthyroidism) may pose considerable risk for thyroid storm when given exogenous doses of epinephrine, or even when subjected to increased stress. However, in patients receiving thyroid hormones there is no cause for concern as long as replacement therapy is maintained at normal levels.²

Similarly, abnormal secretion of adrenergic amines in patients with pheochromocytoma may pose an unanticipated hazard during dental treatment.

Halothane

The volatile general anesthetic agent halothane sensitizes the myocardium to the actions of epinephrine and thus increases the likelihood of arrhythmias. This has led to recommendations that the dose of adrenaline injected under thiopentone/halothane general anesthesia should be limited to 1.0 µg/kg in adults.⁸⁸

Cocaine

Although not widely used anymore for medical purposes, recreational abuse of the sympathomimetic drug cocaine is unfortunately frequent, especially in the younger "healthier" patient. There have been anecdotal reports of cocaine-anesthetic interactions leading to patient death, but it is still unclear what the role of epinephrine-containing local anesthetics has in this.⁸⁹

Toxicity

Toxicity due to epinephrine overdosage should not occur in healthy patients if sensible precautions are taken. Indeed, as far as local anesthetic solutions are concerned, toxicity due to the anesthetic agent is as likely to occur as epinephrine overdosage. The maximum recommended dose of epinephrine administered to a healthy adult is 200 µg.^{5,90} This is equivalent to 11, 1.8 mL cartridges of a 1:100,000 solution, which would contain 396 mg of two-per-cent lidocaine. It is worth noting that 11, 2.2 mL cartridges of a 1:80,000 solution (a standard car-

tridge in the U.K. and Australia) would exceed the recommended dose by 50 per cent (302.5 µg). In this case, the limit is just over seven cartridges.

It is important to point out that another potential source of toxicity is the unfettered use of gingival retraction cord. These materials contain a much greater concentration of epinephrine than local anesthetic solutions, and systemic uptake can lead to significant reactions. Indeed, a fatality attributable to epinephrine overdosage from gingival retraction cord has been reported.⁹¹

Epinephrine toxicity generally presents as anxiety, tremors, cardiac arrhythmias, a sharp elevation in systolic blood pressure and a pounding headache. Treatment includes halting the procedure, placing the patient in an upright position (to reduce the intracranial pressure), and administering oxygen.

Conclusion

It is obvious that epinephrine plays an important role in dentistry. In balance, the practical advantages outweigh the disadvantages, which are for the most part uncommon. Nevertheless, the potential hazards that lack of respect for this potent substance can create must be borne in mind. When employed sensibly, by adhering to dose limitations and by avoiding inadvertent intravascular administration, the use of epinephrine should rarely create any problems in dental practice. ■

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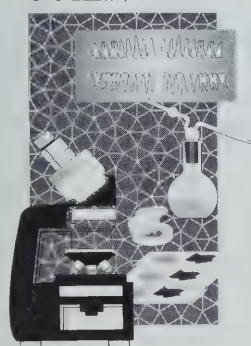
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DID YOU KNOW?

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SCIENTIFIC



A Survey Of Magnetic Fields In the Dental Operatory

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ABSTRACT

Recently, there has been growing concern regarding the biological effects of occupational exposure to weak time-varying magnetic fields, especially those in the extremely low-frequency range (0.1 - 100.0 Hz). This study examined some potential sources and intensities of 60 Hz magnetic fields produced in the dental environment. A random sample of general dental offices and selected specialty offices was visited, and the magnetic fields associated with ultrasonic scalers, amalgamators, composite light curing units, X-ray view boxes and chair lights were measured. The median 60 Hz field strengths measured at various running speeds (off, standby, low and high) and the distances from the equipment (0, 15 and 30 cm) ranged from 1.2 to 2,225 milligauss (mG). Field strengths fell off quickly with distance, but were less affected by the running speed of the equipment. They also varied among the five types of equipment tested. This was likely due to variations in the make, model and age of the equipment.

The 60 Hz magnetic field strengths recorded in the dental operatory were comparable to those reported from measurements of common household appliances. However, in view of recent concerns with respect to the possible effects of magnetic fields, it is sug-

gested that exposures be minimized and the concept of prudent avoidance be employed.

SOMMAIRE

Depuis peu, on s'inquiète de plus en plus des effets biologiques dus à l'exposition, dans milieux de travail, aux faibles champs magnétiques variables, surtout ceux qui sont de fréquences extrêmement basses (de 0,1 à 100,0 Hz). Dans cette étude, on étudie quelques-unes des sources possibles, dans les cabinets dentaires, des champs magnétiques de 60 Hz et leurs intensités. On a donc visité les cabinets de praticiens généralistes et de certains spécialistes choisis au hasard afin d'y mesurer les champs magnétiques créés par les détartreurs à ultrasons, les vibrateurs à amalgame, les appareils de polymérisation pour les composites, les visionneuses de radiographie et les lampes d'éclairage. Les intensités médianes de champs de 60 Hz mesurées sur des appareils à différentes vitesses (on position arrêt, en attente, à basse et haute vitesses) et la distance de ceux-ci (de 0,15 à 30 cm.) variaient de 1,2 à 2 225 milligauss (mG). Les intensités diminuaient rapidement en fonction de la distance, mais moins en fonction de la vitesse des appareils. Par contre, elles variaient également en fonction des appareils mêmes, ce qui pouvait dépendre de leur fabrication, de

leur modèle et de leur âge.

Les intensités de champs de 60 Hz enregistrées dans les cabinets dentaires sont comparables à celles des appareils ménagers ordinaires. Toutefois, vu les inquiétudes soulevées récemment au sujet des effets possibles des champs magnétiques, il convient de réduire les expositions le plus possible et de faire preuve de prudence.

Introduction

There has been a tremendous increase in the generation of man-made electromagnetic fields over the past 60 years. The most common sources include high-voltage transmission lines, distribution lines, building wiring, and electrical appliances. A growing body of research suggests that weak time-varying magnetic fields in the extremely-low-frequency (ELF) range (0.1 - 100.0 Hz) have biological effects.^{1,2} Electromagnetic fields from several sources, including video display terminals, electric blankets and electric power lines, have been targeted as possibly having adverse effects on humans.^{1,3,4} Although the results of epidemiological studies have yielded equivocal findings regarding the possible adverse effects of exposures to 50 and 60 Hz magnetic fields,^{4,7} it has been recommended that exposures be mini-

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Table I
Magnetic Fields Produced by Ultrasonic Scalers in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Off	Contact	26	1.2	23	1.6 $\pm$ 0.3
Standby	Contact	22	965.0	22	863.0 $\pm$ 96.1
	15 cm	22	21.0	22	23.6 $\pm$ 3.4
	30 cm	22	6.1	22	5.5 $\pm$ 0.4
Low	Contact	23	1770.0	23	1836.0 $\pm$ 234.0
	15 cm	24	27.1	24	28.2 $\pm$ 2.8
	30 cm	24	6.0	22	5.3 $\pm$ 0.4
High	Contact	24	2225.0	21	1836.0 $\pm$ 252.0
	15 cm	26	27.7	26	27.0 $\pm$ 2.6
	30 cm	26	5.5	24	5.2 $\pm$ 0.4

*Outliers removed.

mized and that the concept of prudent avoidance be followed.^{6,8}

In addition to the usual residential and environmental sources of magnetic fields, dental personnel are routinely exposed to occupational sources in the dental operator and laboratory. This study was undertaken in response to recent interest and concern regarding ELF magnetic fields, with the intent of establishing 60 Hz magnetic field exposures in the dental operator environment. According to our review of the English-language literature, this information has not been previously reported.

Methods

The 60 Hz magnetic fields produced by five types of commonly-used dental operator equipment were determined in a random sample of 36 general dental offices and four selected specialty offices in London, Ontario. A single operator measured the 60 Hz magnetic fields produced by ultrasonic scalers, amalgamators, composite light-curing units, X-ray view boxes, and chair lights in milligauss (mG) using a portable 60 Hz gaussmeter (ELF Field Monitor, Walker Scientific, Mass.). This unit was standardized against a Bell incremental gaussmeter (Model 620, F.W. Bell Inc., Florida). Where possible, field strengths were measured with the dental equipment in the off, standby, low, and high set-

Table II
Magnetic Fields Produced by View Boxes in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Off	Contact	20	1.1	17	1.1 $\pm$ 0.2
High	Contact	20	200.0	19	202.1 $\pm$ 13.5
	15 cm	20	9.9	19	10.1 $\pm$ 0.7
	30 cm	20	2.3	17	2.2 $\pm$ 0.2

*Outliers removed.

Table III
Magnetic Fields Produced by Amalgamators in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Off	Contact	21	1.8	19	2.2 $\pm$ 0.4
Low	Contact	18	188.5	18	195.0 $\pm$ 30.8
	15 cm	18	8.7	18	10.6 $\pm$ 1.6
	30 cm	18	2.4	18	2.7 $\pm$ 0.4
High	Contact	23	390.0	20	321.4 $\pm$ 38.9
	15 cm	23	15.1	20	14.2 $\pm$ 1.9
	30 cm	23	3.5	20	3.6 $\pm$ 0.4

*Outliers removed.

tings. For each setting, field strengths were measured at contact, 15 cm, and 30 cm from the gaussmeter. In addition, the reliability of the gaussmeter was determined from duplicate measurements of 15 light curing units in the

University of Western Ontario's dental faculty.

The reliability measurements, which were separated by two weeks and obtained by a single operator, were collected in the same manner as the operator

Table IV
Magnetic Fields Produced by Light Curing Units in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Off	Contact	24	1.3	24	1.9 $\pm$ 0.3
Standby	Contact	24	510.0	24	772.0 $\pm$ 159.0
	15 cm	24	34.0	24	27.0 $\pm$ 4.9
	30 cm	24	5.9	24	5.2 $\pm$ 0.8
High	Contact	24	985.0	24	909.0 $\pm$ 139.0
	15 cm	24	30.0	24	27.6 $\pm$ 3.8
	30 cm	24	6.7	24	5.3 $\pm$ 0.7

*Outliers removed.

Table V
Magnetic Fields Produced by Light Curing Wands in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Off	Contact	17	1.1	16	1.0 $\pm$ 0.2
Standby	Contact	24	2.0	21	2.7 $\pm$ 0.6
High	Contact	24	9.6	22	15.5 $\pm$ 3.4

*Outliers removed.

Table VI
Magnetic Fields Produced by Chair Lights in mG

Instrument Setting	Distance from Meter	n	Median	n	Mean* $\pm$ s.e.
Standby	Contact	12	2.2	12	6.5 $\pm$ 2.2
Low	Contact	8	120.3	8	122.9 $\pm$ 23.8
	15 cm	8	5.2	8	10.1 $\pm$ 3.2
	30 cm	8	1.8	8	3.1 $\pm$ 0.9
High	Contact	12	184.0	11	171.0 $\pm$ 29.0
	15 cm	12	10.9	11	10.5 $\pm$ 1.1
	30 cm	12	2.7	11	2.9 $\pm$ 0.4

*Outliers removed.

measurements. There were no significant differences (paired t-test, $p = 0.88 - 0.97$; Mann Whitney test, $p = 0.19 - 0.91$) between the two readings made on the light curing units, establishing instrument reliability.

Results

Of the 40 dental offices contacted, measurements were ultimately obtained from 29. Differ-

ences in office practices and size dictated that the number, make, model and age of the equipment available for testing in each location varied considerably. Because of this variability, median values of the whole data set, as well as mean values with outliers removed, are presented.

Possible outliers were defined as values in the first and fourth quartile. Statistical analysis involved

one-way ANOVA and Kruskal-Wallis or t-test and Mann-Whitney tests were performed on the setting and distance values.

The results are shown in **Tables I to VII**. In the off setting, field strengths ranged from 1.1 to 2.2 mG. There were no significant differences in the field strengths produced among the various types of equipment tested ($p = 0.31$). For each piece of equipment, field strengths fell rapidly with increasing distance at all settings. In every case, significant differences ($p < 0.01$) were found among the three readings. Tukey's pairwise comparisons showed no significant differences between the magnetic field strengths at 15 cm and 30 cm at any setting. However, significant differences did exist ($p < 0.05$) between the field strengths at contact and 15 cm, and at contact and 30 cm, at all possible settings for each piece of equipment.

Variations in the field strengths at the same distance but at different settings or running speeds were not as dramatic. The greatest differences were observed in the contact values for the three settings. Only small differences were seen when the 15 cm and 30 cm field strengths were compared at the various settings. No significant differences were detected in field strengths for the ultrasonic scalers and chair-light transformers where all three settings could be compared. When only two settings were compared (amalgamators, light curing units and chair lights) for the same distance, the only significant difference was observed in amalgamators, where the low contact reading was significantly different from the high contact reading ($p < 0.05$).

Where sample sizes permitted, a preliminary comparison of field strengths by various makes and models of equipment was carried out. **Tables VIII-X** present the results of these comparisons.

Discussion

There has been growing public interest in the possible health effects of extremely-low-frequency magnetic fields. The results of a number of epidemiological studies^{3,4,9} have raised the possibility of potentially adverse health effects

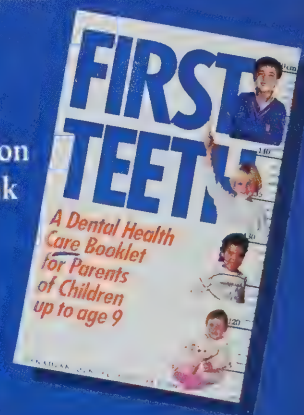
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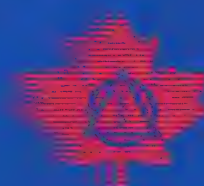


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Table VII
Magnetic Fields Produced by Chair Light Transformers in mG

Instrument Setting	Distance From Meter	n	Median	n	Mean* ± s.e.
Standby	Contact	11	500.0	11	596.4 ± 95.1
	15 cm	11	23.6	11	25.3 ± 2.6
	30 cm	11	5.2	11	6.4 ± 0.8
Low	Contact	10	600.0	11	1150.0 ± 344.0
	15 cm	10	20.1	11	21.8 ± 2.6
	30 cm	10	4.6	11	4.9 ± 0.4
High	Contact	11	890.0	11	1492.0 ± 381.0
	15 cm	11	27.6	11	28.1 ± 2.6
	30 cm	11	6.5	11	6.4 ± 0.8

*Outliers removed.

Table VIII
A Comparison of Median Magnetic Fields (mG) Produced by Various Makes of Light Curing Units

Setting	Distance	n	Caulk-Max*	n	Othert†	p-value‡
Off	Contact	14	2.15	10	1.28	0.730
Standby	Contact	14	1500.00	10	46.00	0.000
	15 cm	14	49.60	10	3.65	0.001
	30 cm	14	8.35	10	1.10	0.001
High	Contact	14	1415.00	10	335.00	0.013
	15 cm	14	42.60	10	9.90	0.001
	30 cm	14	7.70	10	2.50	0.001

*Caulk-Max, Caulk, Downsview, ON.

†Optilux, Demitron, Danbury, CT; Visilux, 3M, London, ON; Elipar Visio, Este-Premier, Markham, Ont.; Vivident/Heliodont, Ivoclar-Vivident, Rexdale, ON, Unknown (3).

‡Mann-Whitney statistic.

from chronic exposures to relatively weak 60 and 50 Hz magnetic fields. However, the types of effects reported vary across studies, with the overall magnitude of the reported effects generally being low. Moreover, studies among magnetic resonance imaging workers on the effect of chronic exposure to very high magnetic fields have not revealed significant effects on pregnancy or fertility.⁵

Tenforde,¹ in his review of the recent literature on the potential health effects of magnetic fields, makes it clear that the results of such epidemiological studies are, however, far from conclusive. Studies evaluating the magnetic fields produced by household appliances have reported fields as

high as 25×10^4 mG. None of the median values for the tested dental equipment approached this magnitude — the highest median was 2,225 mG, at contact, for ultrasonic scalars.

According to Tenforde,¹ ambient room levels have been reported to be less than 3.0 mG in most cases. The results of this study suggest that the dental operator has similar ambient levels. Magnetic fields measured in the off setting were considered to be equivalent to, and representative of, the ambient background levels in the dental operator. In all instances, median field strengths measured with the unit in the off setting were less than 3.0 mG. The highest reading for

this setting, 2.2 mG, was observed with the chair lights.

It is apparent from these results that when the equipment was operating, field strength fell quickly and dramatically with increasing distance from the source. The average median field strength taken at 30 cm, at all running speeds, was 4.55 mG. This represents an average reduction in field strength from contact to 30 cm of 99.1 per cent. A similar drop-off is also characteristic of common household appliances.

In summary, the present results suggest that the 60 Hz magnetic fields generated by dental operator equipment are comparable to those produced by common household appliances. However,

Table IX

A Comparison of Median Magnetic Fields (mG) Produced by Various Makes of Amalgamators

Setting	Distance	n	Varimix II*	n	Varimix III*	n	Othert†	p-value‡
Off	Contact	9	0.80	5	1.60	7	3.50	0.039
Low	Contact	9	220.00	7	200.00	3	24.30	0.162
	15 cm	9	17.00	7	5.40	3	2.30	0.015
	30 cm	9	3.50	7	1.60	3	1.30	0.015
High	Contact	9	380.00	7	390.00	7	420.00	0.238
	15 cm	9	20.20	7	7.60	7	20.00	0.010
	30 cm	9	4.70	7	2.30	7	7.70	0.010

*Varimix II & III, Caulk, Downsview, ON.

†Silamat, Ivoclar-Vivident, Rexdale, ON; Pelton Crane, Siemens Electric, Mississauga, ON; Dentomat, Degussa, Burlington, ON; A-dec, A-dec, Newburg, OR.

‡Kruskal-Wallis statistic.

Table X

A Comparison of Median Magnetic Fields (mG) Produced by Various Makes of View Boxes

Setting	Distance	n	Star*	n	Othert†	p-value‡
Off	Contact	7	1.04	13	1.10	0.639
Low	Contact	7	200.20	13	197.80	0.444
	15 cm	7	9.85	13	10.70	0.639
	30 cm	7	2.30	13	2.50	0.043

*Star, Star-X-Ray, Amotville, NY.

†Sam-Dixon, Star Dental, Lancaster, PA, Unknown (12).

‡Mann-Whitney statistic.

in view of the equivocal results from studies examining the effects of long-term exposures to electromagnetic fields,^{4,7} the concept of prudent avoidance is suggested. In most instances, this can be easily accomplished by simply considering the placement of the dental equipment that generates electromagnetic fields in the dental practice. However, it should also be noted that the results of this preliminary analysis indicate that there are differences in the strength of the magnetic fields produced by different makes and models of equipment. This suggests that any generalizations of the present results must be done cautiously, and indicates that further measurements with larger samples are necessary. Moreover, at this time the cumulative 60 Hz magnetic field exposure by dental personnel is

also not known and should be addressed in future studies. ■

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Ref. No. 222

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Put your practice in the limelight on the city's desirable West Side! This fully equipped three operator facility is strategically located at street level on a major east/west traffic route. The office finishings are of exceptional quality and on-site parking is a key feature in this busy area.

Ref. No. 227

Okanagan

This long standing family general practice is in the rapidly expanding "Hawaii of Canada." The practice is situated in a small, centrally located medical/dental complex in which the purchaser would also acquire a one-quarter share. 90% of the more than 1,500 recall patients are covered by insurance and dental education is above average. An excellent opportunity for growth exists with the current demographic trends in the area.

Ref. No. 230

Victoria

This solid family practice is situated in one of Victoria's most prestigious areas. Superior gross and net incomes and top quality, long term staff make this a very attractive opportunity. The practice is fully computerized throughout the 3 operator facility. The substantial patient base is well developed and a strong emphasis is placed on prevention and comprehensive dentistry.

Ref. No. 234

Orthodontic — Western B.C.

A highly profitable practice ideal as a satellite or expansion to full time. The recent relocation to a 1,300 sq. ft. store front facility provides immediate ability to take advantage of the significant growth potential which exists. Over 300 new referrals per annum and long term vendor support following closing will ensure your success in the acquisition of this practice.

Ref. No. 235

South Okanagan

On the major traffic route, this practice has one of the best locations in town. The office is nestled in a small strip mall with national anchor tenants and excellent parking. The modern, very attractive facility has two equipped ops and room for expansion to four. Unlimited potential for growth exists in this rapidly growing, well known community. The owner is leaving for personal reasons and has priced the practice for a rapid sale. 100% financing is in place on excellent terms.

Ref. No. 236

Richmond

A rare find in this most popular suburb of Vancouver. The top quality facility is situated in a modern health professional complex with expansive views of the North Shore mountains. A solid active patient base, full computerization and a strong emphasis on prevention combine to make this a very attractive business opportunity. Vendor retention following the sale may be possible.

Ref. No. 237

ONTARIO

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A perfect opportunity to apply your conscientious management abilities in this well established "second office." 1,200 active patients have been developed since 1988. The contemporary facility with 3 ops and a 4th ready for expansion is situated in a medical building.

Ref. No. 210

West Central Toronto

This retiring dentist is offering his well established, general practice for sale in a highly desirable area of the city. The practice is very affordable and the two operator facility ensures low overhead.

Ref. No. 214

Thornhill

This is a general family practice in a class "A" mall. High gross income and 1,200 solid recall patients. The facility has three ops equipped and a fourth available. Excellent referral base from medical doctors in same complex.

Ref. No. 216

Brockville

This mid-sized practice will be attractive to a wide range of purchasers. The facility is centrally located with four fully equipped ops and a fifth plumbed and wired. A part-time hygienist assists with careful maintenance of the recall patient program and the vendor is willing to provide extended transition assistance.

Ref. No. 218

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Ref. No. 229

Central Toronto

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Ref. No. 231

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Ref. No. 232

South Western Ontario

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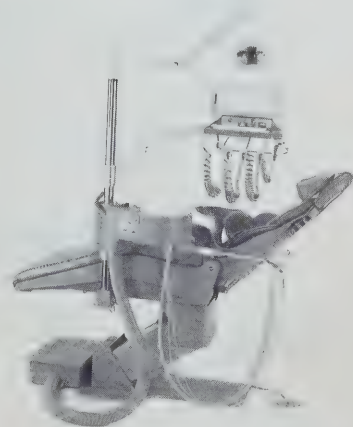
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Solution enzymatique de pré-traitement d'instruments et nettoyage ultrasonique

Instructions:
1. Pre-soak instruments
2. Rinse with water
3. Wash with Microzyme
4. Rinse with water
5. Dry

Microbex

For package insert
see page 10 of the
Microbex product
manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Sonibex

Ultrasonic Disinfecting Detergent Concentrate
Détergent ultrasonique désinfectant concentré

Instructions:
1. Pre-soak instruments
2. Rinse with water
3. Wash with Sonibex
4. Rinse with water
5. Dry

Microbex

For package insert
see page 10 of the
Microbex product
manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Surfex-E

Ethanol Disinfectant for Hard Surfaces
Désinfectant à l'éthanol pour surfaces rigides

Microbex

For package insert
see page 10 of the
Microbex product
manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Lab-X

60 Purpose General Laboratory Disinfectant
Décontaminant à usage général de laboratoire

Microbex

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Microbex product
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or contact
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Microbex

Virobex-P

Antimicrobial Liquid Handwash
Solution antimicrobienne pour les mains

Microbex

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see page 10 of the
Microbex product
manual (201-101-101)
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Microbex at 416-477-5442

Microbex

ex-P

Handwash
pour les mains

Microbex

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manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Lemon Scent / Parfumé au citron

Surfex-E

Ethanol Disinfectant for Hard Surfaces
Désinfectant à l'éthanol pour surfaces rigides

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Microbex product
manual (201-101-101)
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Virobex-P

Antimicrobial Liquid Handwash
Solution antimicrobienne pour les mains

Microbex

For package insert
see page 10 of the
Microbex product
manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Instrubex-E

Ethanol Disinfectant for Instruments
Désinfectant à l'éthanol pour instruments

Microbex

For package insert
see page 10 of the
Microbex product
manual (201-101-101)
or contact
Microbex at 416-477-5442

Microbex

Instrubex-G

Antimicrobial Concentrate
Concentré d'antimicrobien

Microbex

JOURNAL

CANADIAN DENTAL ASSOCIATION/
L'ASSOCIATION DENTAIRE CANADIENNE

OCTOBER/OCTOBRE 1994
VOL. 60, NO. 10

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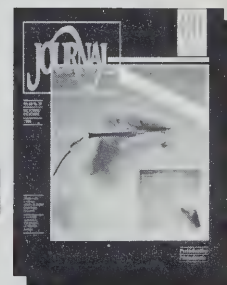
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Cover: The Interprobe hand-piece and graphic chart.

CDA members, look for your next issue of *Communiqué*
with the November issue of the *Journal*.

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Dentistry Canada Fund
Fonds dentaire canadien

Dentistry Canada Fund Up And Running!

On May 3, 1994, the Ministry of Industry and Science, by issuing supplementary letters patent, completed the merger of the Canadian Fund for Dental Education, the Canadian Dental Foundation, the Grieve Memorial Lectureship Trust, the Canadian Dental Research Fund and the Library Trust Fund. The resultant Dentistry Canada Fund, which encompasses the mandate of all of the aforementioned organizations, has the following objectives:

(a) to create and operate a fund for the citizens of Canada to assist in the encouragement of optimal oral health in Canada through education, research and promotion;

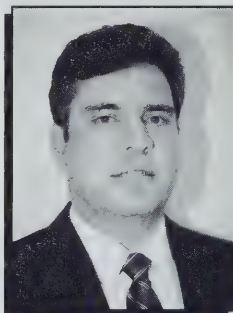
(b) to encourage the highest level of competence among Canadian dentists through the support of public research, lectures, seminars and other similar programs;

(c) to assist in the growth, development and advancement of dental education and the elevation of the qualification of teaching personnel through teaching and management programs and lectures;

(d) to assist meritorious and/or needy students by means of awards and fellowships through public advertisement and juried review panels as funds permit;

(e) to support and maintain the Sydney Wood Bradley Memorial Library as a source and repository for material and data for research into the conduct of the practice of dentistry;

(f) to cooperate, assist and collaborate with other dental professional and dental industry organizations concerned with oral health care. Any such organizations receiving funds from the Dentistry Canada Fund must be qualified donees as the term is defined in the Income Tax Act of Canada;



Dr. Carl Cramer



Ms. Louanne Keenan



Ms. Moira Cookshaw

(g) to conduct educational programs for the public about the importance of optimal oral health and the means to attain and preserve it;

(h) to solicit, receive and hold donations, gifts, devises and bequests for the objects of the corporation; and

(i) to utilize and distribute such money and property in the furtherance of the objects of the corporation.

* * *

DCF has a long tradition of supporting the work of Canadian dentists: since 1920 the fund has granted nearly \$5,000,000 for education, research and awareness programs. Already in 1994, the Fund has continued to support many of its programs. Through the Fellowship Advisory Committee — comprised of Dr. Kenneth Bentley, Dr. Marcia Boyd, Dr. Douglas Chaytor, and assisted by CDHA executive director Carol Matheson Worobey — \$39,300 was awarded to applicants from across Canada.

Pictured here are Dr. Carl Cramer, winner of both the DCF Fellowship and the Henry Thornton Award for most meritorious applicant; Ms. Louanne Keenan, winner of the Dental Hygiene Teacher Fellowship; and Ms. Moira Cookshaw, winner of the Warner-Lam-

bert Fellowship for Dental Assisting Teachers.

As well, \$10,000 was awarded to the University of Manitoba, Dalhousie University, and the University of Toronto through the Wrigley Student Research Awards Program.

Re-designed application forms for 1995 DCF Fellowships are now available — simply phone or write to James Wegg, DCF Manager: 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6, (613) 731-0493. (The deadline for receipt of applications is March 1, 1995.)

The annual donation drive for the Dentistry Canada Fund will take place during October. You will soon be receiving a letter from Dr. Gordon Thompson, DCF Chairman, outlining the many ways you may choose to support your fund. The opposite page gives details of these options. Please give generously when you receive our appeal letter. There is strength in numbers — every gift you make greatly encourages other agencies, businesses and organizations to respond in kind. With your help DCF will be able to approve even more requests for assistance as, together, we support the cause of optimal oral health for all Canadians. ■

Dentistry Canada Fund Donation Options



Dentistry Canada Fund
Fonds dentaire canadien

GENERAL FUNDS

Your donation is used to support projects and programs like the ACFD Summer Management and Teaching Institute, Dental Students Table Clinics, CDA Annual Teaching Conference, CDA Annual Students Conference, CDHA Research Conferences, Grants to Dental Schools.

DEVELOPING FUNDS

A developing fund recognizes the contribution of an individual or organization to any aspect of dentistry. You may choose to donate to a specific fund or perhaps initiate a new one.* Once the principal surpasses \$10,000 the fund is automatically converted to endowment status. Current DCF developing funds are the CDHA, the John King, the William Madronich, the George Vasiga, and the Barbara Wilson funds.

ENDOWMENT FUNDS

Any of our endowment funds can be nurtured by your donation. The net interest of all DCF endowment funds is used to support our many programs and projects — especially funds for the needy. DCF endowments funds are named after George Barrett, Allan Chantler, Thomas Curry, Frederick Gollop, Charles Hunt, Ken Lawless, Lorne MacLachlan, Nicholas Mancini, Bruno Martinello, Murray McDonald, Donald Williams, and Donald Winget.

* For further information on establishing a DCF fund, please contact the DCF manager.

DCF Memorial Gifts

Donations can be made at any time of the year in memory of a relative, friend, or colleague by those who believe that an investment in the future is a fitting tribute to those who have contributed so much in the past. Special memorial forms are available from the DCF office.

Planned Giving

Our Planned Giving program provides a variety of vehicles including bequests, annuities, insurance policies, and charitable remainder trusts. The DCF manager would be pleased to personally discuss the options with you in confidence.

DCF's ongoing funding also supports the following programs:

- Eaton Award for Excellence
- Grieve Memorial Lecture
- Brånemark Cranio-Maxillofacial Rehabilitation Fund
- Murray McDonald Lecture

FELLOWSHIPS

A donation here goes towards DCF's own annual fellowships and scholarships to dental students and teachers, dental hygienist students and teachers, and dental assisting students and teachers. The DCF Fellowship Advisory Committee assesses all applications on the basis of merit and need.

RESEARCH

Research and development projects are a vital part of DCF's mandate. Your financial support to this area helps us to ensure that the problems facing dentistry tomorrow are being methodically examined and planned for today. As all aspects of our world become more complex the value of these projects increases.

LIBRARY: OPERATIONS/MATERIALS

A bequest of \$1.6 million from the estate of Helen Langstaff provides much needed income for the operation of the Sydney Wood Bradley Memorial Library. Even so, this wonderful resource for everyone in the field of dentistry still requires more than \$200,000 of additional funding each year.

Your donation will be put to good use as the Library acquires new books, equipment, publications and subscriptions.

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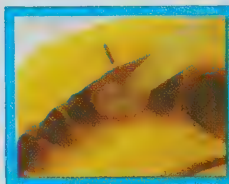
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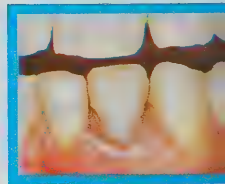
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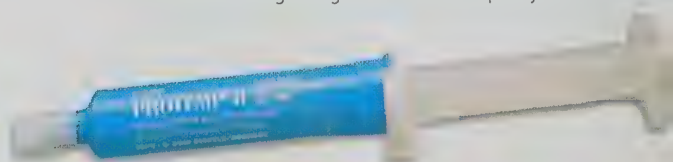


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EDITORIAL

WHY DID YOU BECOME A DENTIST?



Dr. P. Ralph Crawford,
Editor

I've been fortunate enough, over the past couple of weeks, to speak to several classes of first-year dental students at "welcome to the profession" receptions.

These are typically fun, happy occasions, possibly because the students are invariably young, eager and hopeful. They're also exceptionally bright. For every 10 students who apply to our Canadian dental schools, only one candidate is ultimately accepted.

It goes without saying that these successful candidates have all worked extremely hard to get where they are. However, most have little or no conception of what lies ahead in their future careers. Perhaps it is this mystique, more than anything else, that contributes to the excitement of a welcome to the profession evening.

When I attend these events, I make an effort to not only meet as many new dental students as possible, but also to engage them in friendly conversation. And after inquiring where they hail from, and where they did their pre-dent, I usually ask each student the same question: "Why do you want to be a dentist?"

It's a question that every one of us has faced at some point in our lives. More importantly, it's a question that probably shaped our careers, even as it led, in intervening years, to a second, equally important question: "Am I glad that I became a dentist?"

My questioning routine really began in the late 1960s, when I was invited to present a dental practice management course to senior students at the University of Manitoba. It was an exciting time in dentistry. High speed was firmly entrenched, composites were coming onto the market, fluoride was a household word, and dispersion alloys were being hailed as the single greatest improvement to amalgam since the introduction of G.V. Black's original 1895 formula. The economy was booming in those days. No one had to buy goodwill to establish a practice, and a 50:50 agreement with an associate was commonplace.

For each of the four years that I conducted the practice management course — and remember it was the late 1960s — I began the first lecture by giving each student a blank piece of paper and asking them to describe why they'd chosen dentistry as a career. They weren't required to identify their paper in any way, so their anonymity was guaranteed.

By the end of the program's fourth year a pattern had evolved. Apart from a smattering of atypical replies — my mother made me, my father (never a mother in those days) is a dentist, I couldn't get into medicine — the bulk of the answers fell into three broad categories — missionary, independence and, of course, money.

The responses listed under my missionary category all had a familiar ring: I want to help my fellow man; I want to make the world a better place to live; I want to contribute something worthwhile; I want to feel useful.

Under my independence category, the responses listed most often were: I want to be my own boss; I don't want to work

for someone else; I want to make my own decisions, etc.

Finally, under my third category, money, the following were listed: "I want an above average income; I know I will never get rich but I never want to be poor; I want to adequately provide for my family, etc.

One of the interesting things I noticed, after collecting data over a period of four consecutive years, is that no one of the three prime motives for becoming a dentist — missionary, independence, or money — superseded the other two. The weight of answers under each category was about equal year after year.

Guess what? Twenty-five years later, when I posed the same "Why did you choose dentistry as a career?" question to the latest generation of bright, young, first-year dental students in 1994, the replies I got all fell into the same three categories — missionary, independence and money. And I'm glad, because as a trio they are still excellent motives for pursuing any vocation.

Looking back 34 years to my own first week in first year dental school, I am sure the same three reasons — missionary, independence and money — motivated me to become a dentist, too. I couldn't then, and certainly can't now, say with certainty that any one of these three reasons motivated me more than the other two, only that they were and are valid, honest reasons to enter the dental profession.

More importantly, those of us who entered dentistry with a proper balance of the missionary, independence and money motives, and perhaps a touch of moderation in all things, will be able to proclaim, at the end of a long, successful career: "I'm glad I chose dentistry."

P. Ralph Crawford, BA, DMD
Editor of *Journal of the Canadian Dental Association*

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Patient with severe periodontal resorption.



Same patient after insertion of Virginia Partial.

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Treating Periodontal Diseases

- Bader, H.I. "Scaling and root planing: its role in contemporary periodontal therapy. *Compendium*. 14(4); 1993, pp. 436, 438, 440-2.
- Socransky, S.S. and Haffajee, A.D. "Effect of therapy on periodontal infections." *Journal of Periodontology*. 64(8 Suppl); 1993, pp. 754-9.
- Pearlman, B.A. "Long-term periodontal care: a comparative retrospective survey." *Journal of Periodontology*. 64(8); 1993, pp. 723-9.
- Wolff, L. and others. "Bacteria as risk markers for periodontitis." *Journal of Periodontology*. 65(5) [Suppl]; 1994, pp. 498-510.
- Bakdash, B. "Oral hygiene and compliance as risk factors in periodontitis." *Journal of Periodontology*. 65(5) [Suppl]; 1994, pp. 39-544.
- Genco, R.J. "Pharmaceuticals and periodontal diseases." *JADA*. 125[Special issue]; 1994, pp. 11s-19s.
- Ciancio, S. "Use and abuse of antibiotics in periodontal therapy." *Dental Economics*. 83(6); 1994, pp. 98-100.
- O'Hehir, T.E. "Is the six month recall a realistic interval of care?" *RDH*. 13(10); 1993, p. 18.
- Shapiro, N. "Retaining periodontal hopeless teeth." *JADA*. 125(5); 1994, pp. 596-8.

LIBRARY PACKAGE: OCTOBER 1994

In keeping with the theme of this issue of the *Journal*, the Library Package for this month is **Treating Periodontal Diseases**. There are about 30 articles in this package, obtained in part from the information available in the last two years on the MEDLINE database. The packages are \$5 plus tax, for CDA members. A sample of articles in this package are listed below. For a complete list of more than 60 current library packages, please contact the CDA Library by calling: 1-800-267-6354, extension 223.

- Gunsolley, J.C. and others. "Maintenance therapy in young adults with severe generalized periodontitis." *Journal of Periodontology*. 65(3); 1994, pp. 274-9.
- Ah, M.K. "The effect of smoking on the response to periodontal therapy." *Journal of Clinical Periodontology*. 21(2); 1994, pp. 91-7.
- *Brushing Magic with Dudley and Dee Dee*. Produced by the American Dental Association. 1994, 7:45 min.
- *The Haunted Mouth*. Produced by the American Dental Association. 12:57 min.
- *It's Dental Flossophy, Charlie Brown*. Produced by the American Dental Association. 1980, 5:26 min.

Videos

The following videos have been added to the CDA Library collection and are available for loan to members of CDA for \$5 each, plus applicable taxes.

To order any of these, or to receive a complete list of our videos, please contact the library.

- *Keeping Your Smile a Lifetime*. Produced by the American Dental Association. 1990, 11:00 min.
- *Toothbrushing with Charlie Brown*. Produced by the American Dental Association. 1973, 4:53 min.

DID YOU KNOW?

Ride That Greyhound

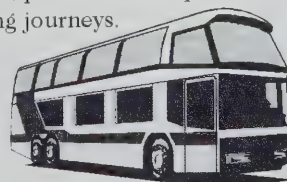
In 1914 Carl Eric Wickman opened a Hupmobile car dealership in Minnesota. When business was slow, he used one of the Hupmobiles to drive miners the four miles between the town of Alice and Hibbing, charging 15 cents per trip — 25 cents for the round trip.

The enterprise turned quite profitable — he made \$2.25 the first day — and by 1916 Wickman had expanded it to include long distance routes.

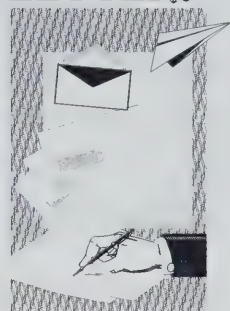
Wickman, ever the entrepreneur, painted the Hupmobiles grey to hide the dust during long journeys.

This prompted one hotel owner along the Hupmobile route to comment that they looked like greyhound dogs.

Wickman liked the idea and adopted the slogan, "Ride the Greyhounds."



LETTERS



Chlorhexidine

I followed with interest the ongoing debate regarding the use of chlorhexidine varnish (CHZ) and Cariescreen testing (CHS) in general dental practice in the August issue of the *CDA Journal* (Lewis, D.W. "Another Update For Canadian Dentists Regarding Chlorhexidine Varnish Therapy For The Prevention of Dental Caries."; Sandham, H.J. "Response to Dr. Lewis's Criticism of Chlorhexidine Varnish Therapy." 60:717-720, 721-722, 1994).

I have been using these products in my practice for about eight months, and I would like to share some of my concerns and positive experiences.

One concern I have is with the advocated testing regime using Cariescreen. Knowell suggests testing a very broad spectrum of patients, regardless of their caries experience. They then advocate treatment based solely on whether s. mutans counts exceed a standardized level. The "gold standard" of 250,000 cfu of s. mutans as the at-risk level does not take into account the fluoride experience of the patient, or the buffering ability of saliva. It is quite possible for a patient to have fairly high s. mutans levels without ongoing decay.

Taking this into consideration, I only test patients if they have one or more of the following conditions: incipient lesions; active decay; multiple restorations in the past few years; or above average levels of restorations for their age group.

I feel that testing patients who do not meet these criteria is unwarranted, as is treating them with CHZ, even if they were to test above the low-risk level.

A second concern of mine has been the heavy emphasis on testing and immediate aggressive CHZ treatment regimes, without trying to modify the causative lifestyle habits. This can only treat the symptoms, and leads to re-infection and the need for repeated, expensive treatments.

For example, testing any patient with gross untreated caries will always result in extremely high s. mutans levels. Knowell advocates multiple CHZ applications in this instance.

My approach has been to repair the carious lesions, review oral hygiene, extensively review diet, and then retest patients. In most cases, the s. mutans counts will decrease to low levels without CHZ therapy. Patients whose compliance is still inadequate will test high again, and only then will I apply CHZ.

In my practice, about one in three patients meeting the testing criteria prove to be at medium or high risk. Once the causative factors have been removed, about two-thirds of these patients retest at low risk. The remaining patients receive CHZ treatment, and many of them have tested low risk at six months after the single CHZ therapy. Patients who simply will not comply with hygiene and especially diet requirements have shown slowly increasing s. mutans counts, and may need re-treatment. These are the patients who formerly experienced rampant caries.

I find Cariescreen to be a valuable diagnostic adjunct. I can feel confident in leaving incipient lesions on patients with low s. mutans counts. I will treat these lesions more aggressively if the patient has high s. mutans counts and is unable to reduce them. This is also valid in deciding whether to replace or observe older restorations without obvious decay. The Cariescreen results can also influence the frequency of bitewing X-rays.

I feel that when it is used in this common-sense fashion, with due regard to traditional preventive dentistry, Cariescreen and Chlorzoin are cost-effective and useful additions to the dental practice.

Richard Ehrlich, DDS
Bolton, Ont.

Great Job — But

In his July editorial ("The Journal — A Delicate Balance," Vol. 60, No. 7, p. 583), Dr. Ralph Crawford wrote: "The Journal's success can only be judged by our readers' comments. Please let us know how good a job we are doing."

I think that the *CDA Journal* is very good. It's too bad that I found this error — "... because thjst look away, ey do not meet ..." — in the July issue (In: Crawford, P.R. "From the Mind to the Printed Page — A Journal Article's Journey." 60:611-612, 1994).

Dr. E.F. Allison, DDS
Calgary, Alta.

Editor's Note

Thanks for the kind words and for pointing out the typo — we do regret the gremlins in our desktop publishing system.

Russian Dental Student Seeks English Literature

I am a foreign Ugandan student in my 5th year of dental studies at Kuban Medical Academy in Krasnodar in southern Russia.

It is difficult to get dental literature here in the English language. In the past, I have written to some dentists practising in Britain and the copies of the *British Dental Association Journal* sent to my university have helped us a great deal.

I would be most appreciative of any copies of the *Journal of the Canadian Dental Association* or any literature which Canadian dentists may be able to send me.

John B. Mugisa
Krasnodar 350044
Kalinini Street 13, Russia

... More Letters on page 905

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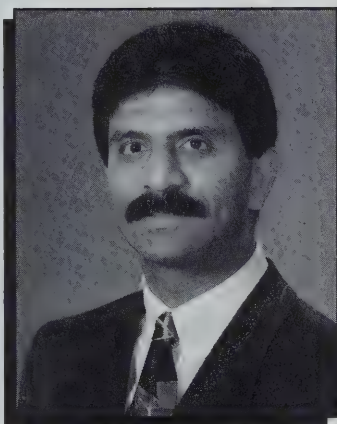
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Dentistry: "What, a Future?" or "What a Future!"

Imtiaz Manji, B.Sc.

Principal of ExperDent

Whether you talk to recent dental graduates or their established counterparts, there seems to be a common thread emerging: pessimism. It's not a matter of being disgruntled with dentistry, but rather anxiety about the changing face of the profession, and uncertainty about what's to come as we approach the turn of the century. There's no question that things are not going to remain status quo. As we'll see in this month's column, there are dramatic changes in store. But, as I hope to demonstrate, the dynamism of dentistry need not elicit gloom and doom. Not only are there ways to protect your practice from being negatively affected by these changes, the future could prove to be better than ever.

Operative (and Often Competitive) Financial Interests

When you consider the many forces involved in getting dentistry done, it's amazing that this health care service is provided at all. From a financial standpoint, there are: third-party insurance companies that need to be profitable; dentists who have the same need; and patients who want and expect the best, albeit least expensive, care. To get these three interests in line is no easy task. The news here is: it's only going to get harder.

Present and forecasted economic realities dictate that third-party insurance companies must become increasingly sophisticated in the type of plans they offer. Their actuaries — diligent in assessing risk, calculating premiums and analyzing user trends — are under unprecedented pressure to perform. Increasing the profits of the companies they work for while remaining competitive in the marketplace (offering attractive packages to employers) is the *raison d'être* of these highly astute number-crunchers.

Coinciding with the inventiveness of third-party insurance companies is the need for employers to keep their overheads in check. Many are doing so by replacing their full-time benefits-receiving employees with the contract workers of a new and ever-growing freelance economy. The favored few who do have full-time employment, are likely finding that benefits packages are increasingly restricted — because they are considered by many employers to be an area of discretionary spending, benefits packages are one of the first places where costs are cut.

The impact of dwindling and restricted third-party coverage is affecting many health care areas, including dentistry. Practising dentists are looking to provide necessary treatment but often feel compromised in the level of care they

can provide (or are not able to provide it at all) because of coverage limitations. Patients want the best possible care, they say, but only if it's covered under their plan. (As we'll see later in this article, this attitude has to do with dentistry's failure to create value for services.)

A Shift in Services

The financial factors at work, though significant, do not tell the whole story. The other major influence on the profession is the shift in the emphasis in dentistry: dental services are becoming increasingly elective and preventive. The profession has done an outstanding job in educating patients about their oral health and has consequently yielded a significant drop in dental disease. There is simply less so-called obvious dentistry in patient's mouths. (And with a surplus of dentists in many jurisdictions, there are also less patients for each practitioner. This supply and demand issue has created an intense competitiveness in the profession. Dentists must develop and hone their skills in elective and preventive dentistry to remain current and competitive.)

Room for Optimism?

So, with the decline of insurance-driven dentistry and with less restorative work to perform, why

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am I excited about dentistry? It's not because I don't recognize the forces at work. Clearly, if dentists rely on the third-party insurance industry and employee benefits packages as the lifeline of their practices, they'll find themselves unduly compromised. But I see several opportunities for dentists to get back on track and do what they may have been back-burnering for some time, and to place their attention where it should always have been — in creating value for dentistry (including discretionary dentistry). Perhaps it is because of the presence of dental insurance — and the security blanket it provides — that the profession has neglected to communicate its value to patients. But now, with the narrowing of insurance schemes (and the shift toward optional dentistry) consider it a call to action.

Preparing for the Future

There are myriad ways for dentists to prepare themselves for an exciting future, but three areas are particularly key: patient management, team management and overhead management. Patient and team management are really about managing relationships. If you communicate effectively with your patients and staff — and involve them in the process of dentistry — they'll understand the importance and the value of your services. And when equal attention is given to managing practice overhead, you'll find you can't help but be geared for success.

Patient Management

When dental teams discuss patient management, they often do so from a narrow perspective or vantage point. They discuss how to get patients to arrive on time (an administrative issue) or how to get them to floss regularly (a clinical issue). Certainly, these areas are important, but patient management is so much more than facilitating patient actions. It's a recognition that a dental practice has natural resources — patients — which are the core around which all activity revolves.

It usually begins with taking a bird's eye view of the way patients

ebb and flow through the practice. How do they participate in dentistry? If it's not regularly, good patient management dictates that the team find out why. Is it because patients don't understand the treatment options, or because they fear a particular procedure? Knowing why patients don't proceed is important. If it's because they don't see the value in what you're recommending, this may be a signal to hone your communication skills. If they do see the value, the issue of whether or not the treatment would be covered by insurance would become less important. People are willing to pay for services they value. And they're also quick to refer others to those who provide such value.

Team Management

Team management is inextricably linked to patient management, because the team is responsible for steering patients through the practice. The way in which the team motivates, communicates and facilitates, therefore, is all-important. As their leader, you must instill team members with the confidence, skills and resources necessary for them to carry out their duties. If you can get your team to participate effectively, you'll find that the classic irritations of practice management diminish: financial policies, explained to patients prior to treatment, mean few collection problems; advance appointment bookings at each visit yield less recall calls. Effective team-patient communications, the cornerstone of successful practices, can work wonders.

Overhead Management

Whether in industry, government or private enterprise, keeping overheads in check has become very '90s, and dentistry must pay attention too. Business-wise practitioners have recognized this and are taking action.

Look at your practice and ask what you could be doing to reduce overhead or increase revenue. Perhaps you're working four days per week but your practice could be open six or seven days per week. Your rent and many other fixed costs would remain the same but

by using your excess "facility" and resources properly, you could increase your revenue (if you worked more) or decrease your overhead (by having another practitioner use the space). It is my opinion that if all the down-time in dental chairs was used effectively, we wouldn't need another operator in this country for the next quarter of a century.

Many dentists make the wrong moves when looking to reduce overhead/increase revenue. Because they feel busy, they often look to growth as a way to gain, and decide to take on associates and/or expand their facilities. Unless the practice was at a point of saturation, both of these strategies are likely to increase overhead but not increase net revenue. (Saturation means that the treatment needs of a growing patient base exceed the ability of the dentist to serve them, and the dentist has excess wealth in his/her practice.)

Instead of looking at growth as the answer, these practitioners need to ask themselves some important questions, including: "How many hours do I want to commit to work each week?" Let's use 30 hours as an example. The next question then becomes: "How do I configure my practice so that in 30 hours per week I can achieve the production that's necessary to keep my overhead between 50 per cent and 60 per cent?" (If your overhead is really high, you may start with a goal of 70 per cent and then reduce it incrementally over time until you reach your optimum overhead capability.)

You may find that your practice is not the right size, that it's too large. If you're working with 2,500 charts and two to three hygienists, assistants and receptionists, you might consider the implications of transferring half of the practice to another practitioner who could work in your facility. (Ideally, you want to have two practitioners working out of a four-chair facility.) In effect, you would be reducing your overhead by downsizing (but, happily, not through employee layoffs) and you would be creating opportunities for dental staff and for patients. This is only

one solution that successful dental practices have used to achieve the optimum 50 per cent to 60 per cent overhead.

The Future Is Now

You've heard about it, read about it and now it's time to do it: do more (or at least the same) with less. Less operatories, less staff and most likely, less patients (but not less dentistry!). Effective patient, team, and overhead management will ensure you remain productive and patient-centred. You need to create value for the services you provide (which will be increasingly elective and preventive) so that case acceptance will no longer depend on insurance coverage; you need a team which fully supports and participates in the established practice systems; and you need to look for creative ways to reduce your overhead — such as cost-sharing arrangements with other dentists. Accomplish this and you'll be preparing your self for the "future" which, as we all know, is now. ■

For more information on:

- **Patient management**, please see *Practice Management and Success* in the June '91, August '92 and January '93 issues of the *Journal*.
- **Team management**, please see *Practice Management and Success* in the October '91 and September '92 issues of the *Journal*.
- **Saturation**, please see *Practice Management and Success*, "Achieving Success: Moving Beyond the Comfort Level" in the October 1993 issue of the *Journal*.

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Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	August 31, 1994	July 31, 1994	
Bond & Mortgage Fund	11.15064	10.84682	0.1%
Common Stock Fund	24.00099	23.19638	6.9%
Money Market Fund	67.96798	67.65421	4.5%
Balanced Fund	42.95633	41.53477	4.0%
Aggressive Fund	8.87900	9.08633	N/A

G.I.C. Fund Term

	August 31, 1994	July 31, 1994
1 yr	6.55%	7.20%
2 yr	7.45%	7.90%
3 yr	7.80%	8.30%
4 yr	8.05%	8.50%
5 yr	8.20%	8.65%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:
(includes RRIF assets)

	August 31, 1994	July 31, 1994
	\$192,044,619.00	\$185,838,046.00

For further information:



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Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
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1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.



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CDA and QDSA Studying Claims Agreement

CDA and QDSA are studying means to link their respective electronic data interchange networks, CDAnet and Dentaide, as effectively and efficiently as possible. The partnership agreement they are looking for would allow all Quebec dentists to subscribe simultaneously to both telecommunication networks.

This agreement should also provide for CDA to waive the exclusivity clause in the CDAnet subscribers agreement as far as the Dentaide network is concerned.

Thus, Quebec dentists could electronically send dental claims to insurance companies outside Quebec through the CDAnet/Dentaide network. As well, all Canadian dentists could communicate electronically with the Dentaide Centre through the same network.

Established in 1983, the Dentaide Centre allows Quebec dentists to send their dental claims by telephone or electronic transmission to the Centre to obtain immediate claim processing and direct payment of the insured portion to dentists who are Dentaide members.

CDAnet offers rapid electronic claims transmission and processing, and allows for adjudication of most claims before the patient leaves the dentist's office.

Dr. Daniel Pelland, QDSA president, and Dr. Bryun Sigfstead, CDA president, are expected to announce the results of the ongoing discussions before the end of 1994. ■

Dr. Warren M. Retter Elected A/O Mount Royal Dental Society President



Dr. Warren M. Retter

Dr. Warren M. Retter of Montreal has been elected president of the Alpha Omega Mount Royal Dental Society for the 1994-95 term.

A McGill University graduate in both genetics (1975) and dentistry (1979), Dr. Retter maintains a full-time private practice in Montreal. He has been a part-time clinician and lecturer in the faculty of dentistry at McGill for the past 13 years, and also teaches in the resident's clinic at the Jewish General Hospital.

Also elected to executive positions for the 1994-95 term were: Dr. Steve Cymet, immediate past-president; Dr. Joe Swimmer and Dr. Jack Turkewicz, vice-presidents; Dr. Lorne Wiseman, treasurer; Dr. Jacob Tink, secretary; Dr. Emil Shiri, editor; Dr. Jeffrey Tenser, associate editor; Dr. Elliot Goldenberg, alumni chapter deputy; Dr. Brian Kizner, regent. ■

Dentists and Ivoclar Support Dentistry Canada Fund

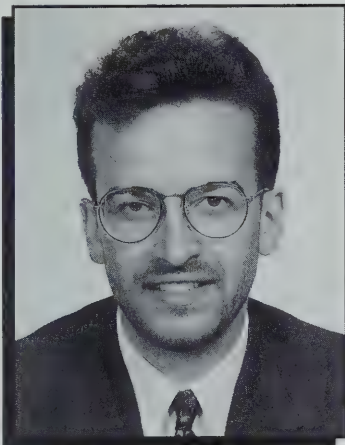
More than 20 Canadian dental professionals from across Ontario were among the "swingers" participating in the Ivoclar North American Second Annual Open Wide Golf Tournament.

Held June 29, 1994, at the Glen Oak Golf Club in Amherst, New York, the event attracted more than 100 participants from the Niagara Peninsula. Proceeds from the tournament were donated to the Dentistry Canada Fund and the American Fund for Dental Health. ■



Ivoclar and Niagara Peninsula dentistry support the Dentistry Canada Fund: (front row l to r) Dr. Ivan Hrabowsky, Dr. Yoshimi Kinoshita, Jan Eddy, Patt Sinclair, Brian Binnie; (second row l to r) Al Loberg, Gord Kretz, Mike Pittcock, Jim Lum, Jamie Matera, Ian Gibson, Eric Fowler, Andy Lum, Pat Segnere, Pat Mines, Tom Schramm; (back row l to r) Reg Goulding, Robert Ganley, Mike Hrabowsky, Duane Baluke, André Theberge, Jim Eddy.

Dr. Richard Jordan Awarded Pathology Prize



Dr. Richard Jordan

Dr. Richard Jordan of Toronto has been awarded the prize given to the researcher presenting the best original research paper at the International Association of Oral Pathologists' (IAOP) annual Congress.

A graduate of the University of Toronto's dental faculty, Dr. Jordan had been studying the immunoproteins present in the salivary glands of patients with Sjogren's syndrome to facilitate the recognition of individuals liable to develop malignant lymphoma.

Dr. Jordan is a fellow of the Royal College of Dentists of Canada in oral pathology. At present he is working in the Eastman Dental Hospital, University of London, on a Canadian Medical Research Council Fellowship. The 1994 IAOP Congress was held in York, England. ■

University of Malaya Launches New Journal

The *Journal of the Canadian Dental Association* extends best wishes for success to the faculty of dentistry, University of Malaya, Kuala Lumpur, Malaysia, on the planned 1995 launch of its new annual dental journal: *Annals of Dentistry, University of Malaya*.

Further information may be obtained by writing to the Editor, *Annals of Dentistry*, University of Malaya, 59100 Kuala Lumpur, Malay-

Canadian Dental Officers Hold Graduation Ceremonies

Graduation ceremonies for Dental Officer Training Plan (DOTP) Phase III candidates were held at Canadian Forces Base Borden August 5, 1994.

DOTP is a Canadian Forces program that subsidizes the educational and living expenses of dental students, then employs graduates in Canadian Dental Forces dental clinics for three or four years of obligatory service.

On completion of their third or fourth year of dental school, students are sent to the Canadian

Forces Dental Services School at Borden for an intensive five-week course that familiarizes them with administrative procedures and mobile field dental environments.

The 1994 graduates are: Captain Paquet, Laval University; Capt. Mailhot, University of Montreal; 2nd Lieut. Duffy, Dalhousie University; 2nd Lieut. Moser, University of Saskatchewan, and 2nd Lieut. Aita, University of Montreal. ■



Brig.-Gen. V.C. Lanctis (left) presents the Honor Candidate Trophy to Capt. J.N.M. Mailhot of the University of Montreal.

sia; Fax 603-7561607. Authors are invited to submit original articles, reviews, case reports and other papers of interest in dentistry. ■

U. of T. Research Group Awarded \$5.27-Million

The Medical Research Council (MRC) Group in periodontal physiology has been awarded a new six-year contract worth \$879,000 per year, or more than \$5 million dollars over the life of the deal, to continue its studies on periodontal tissue regeneration.

Based in the dental faculty at the University of Toronto, the group was originally formed by Dr. Antony H.

Melcher in 1973, and is currently the longest-standing MRC Group in Canada. It has provided a focus of basic research within the university's faculty of dentistry for more than 20 years, and is world-renowned for its multidisciplinary approach to studies of the fundamental processes involved in the regeneration of connective tissues lost as a consequence of disease.

Three new members recently joined the MRC Group at U. of T. Dr. Chris McCulloch, a periodontist in the faculty, brings expertise in cell kinetics, cell signalling and periodontal cell differentiation, while Dr. Arun Seth, a molecular biologist from the National Cancer Institute in Maryland, will study molecular aspects of cell behavior using recom-

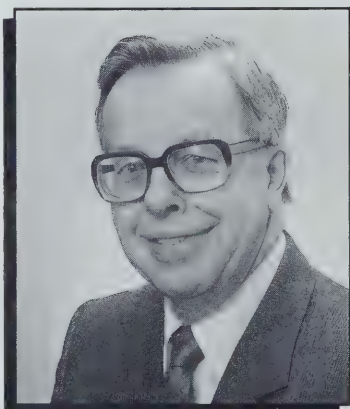


MRC Group in periodontal physiology, University of Toronto (l to r): Drs. Howie Tenenbaum, Arun Seth, Chris McCulloch, Jaro Sodek (director), and Jack Ferrier.

binant DNA technologies. Dr. Howie Tenenbaum joins the group as an associate member collaborating on studies of bone formation.

Other group members include Dr. Jack Ferrier, a physicist with interest and expertise in cell membrane electrophysiology and cell signalling, and Dr. Jaro Sodek, the group's director, who has been studying the biochemical aspects of connective tissue formation and remodelling. ■

International Dentistry Mourns Death of Dr. Robert Patrick



Dr. W. Robert Patrick, 1925-1994

Dr. W. Robert (Bob) Patrick of Trenton, Ontario, a past-president of both the Academy of General Dentistry (AGD) and the Academy of

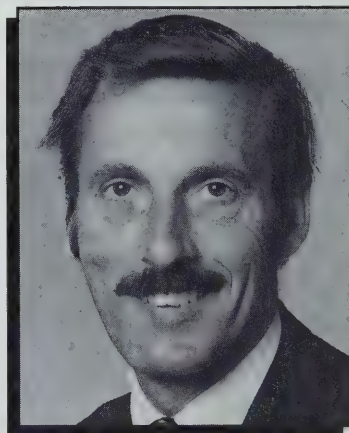
Dentistry International (AGI), died suddenly in his sleep June 12 at the age of 69.

A graduate of the University of Toronto, Dr. Patrick practised dentistry in Trenton for more than 40 years. He was very active in the community, and served as town councillor in 1970-1971 and again in 1973-1974 before becoming mayor in 1974, a post he held for two terms.

Dr. Patrick's many talents and leadership skills were often displayed during his long involvement in national and international dental organizations. He became a fellow of AGD in 1973, and served a term

as president in 1983-1984. Inducted into ADI in 1983, he became the Academy's first international president in 1987-1989. He was also a fellow of the International College of Dentists and the American College of Dentists. ■

Ottawa To Host International Standards Meeting



Dr. Derek Jones

The International Standards Organization (ISO) Technical Committee on Dentistry (TC-106) will meet in Ottawa October 10-15.

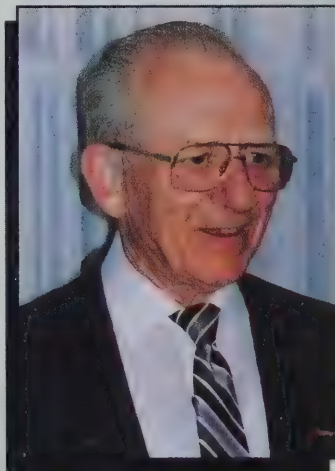
Chaired by Dr. Derek Jones of Dalhousie University, the ISO meet-

Prominent Moncton Dentist Dies At 68

Dr. Donald Cerdic Steeves of Moncton, New Brunswick, died at home June 6, 1994.

After graduating from the faculty of dentistry at Dalhousie University in 1948, Dr. Steeves practised in Moncton for 45 years. He was a past-president of both the Moncton and New Brunswick Dental Associations, and a former chief of dental staff at the Moncton Hospital.

Dr. Steeves was a fellow of the International College of Dentists and the American College of Dentists. A life member of CDA, he was awarded the association's Distinguished Service Award in 1989. ■



Dr. Donald Cerdic Steeves, 1926-1994

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ing will involve 36 working groups, five sub committees and the full technical committee, which will all meet during the six-day event. The meeting is expected to attract more than 200 delegates from 18 countries to Ottawa's Government Conference Centre.

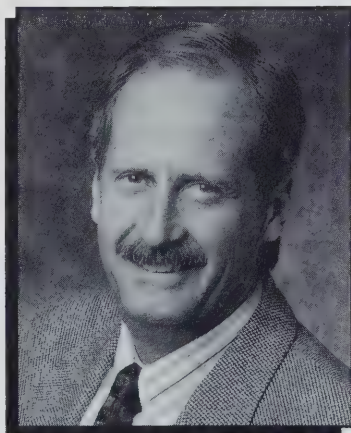
CDA has already contributed \$10,000 toward the cost of the meeting, and is providing administrative staff support to Dr. Jones.

Dr. Jones is the chairman of CDA's committee on dental materials and devices. He is also the chairman of the Canadian advisory committee to ISO/TC-106. ■

B.C. Dental College Elects New President

Dr. Don Scramstad of Kelowna has been elected as president of the College of Dental Surgeons of British Columbia.

Other officers for the 1994-95 term include: Drs. Larry Rossoff and John Fraser, vice-presidents; and Dr. Garry Lunn, treasurer. ■



Dr. Don Scramstad

OBITUARIES

Belliveau, Dr. Thomas E.: A graduate from Dalhousie University's faculty of dentistry in 1953, Dr. Belliveau served overseas during the Second World War in the Royal Canadian Air Force. He last practised in Halifax, Nova Scotia, where he retired in 1992 after 40 years in dentistry. Dr. Belliveau died August 5, 1994.

"WHAT'S IT?"

Our August "What's It?" mystery item was correctly identified by Dr. Francis Simard, head of the department of dental medicine at the Louis-H. LaFontaine hospital in Montreal, who recognized the device as a tool used in transillumination diagnosis.

Along with his correct answer, Dr. Simard kindly sent the CDA

museum the 1924 fifth edition of *Diagnosis by Transillumination* by W.J. Cameron, which outlines extensively Dr. Cameron's teaching and theories. Dr. Simard's donated book compliments the Cameron kit already in the museum and makes understanding the transillumination process much clearer. ■



Boudreau, Dr. Gerard: Dr. Boudreau graduated in 1942 from the University of Montreal's faculty of dentistry. Dr. Boudreau practised in Sherbrooke, Que. before his retirement in 1986.

Dorion, Dr. Elie: A 1926 graduate from the University of Montreal's faculty of dentistry, Dr. Dorion died July 29, 1994 at the age of 94.

Johnson, Dr. Kirk R. passed away on August 7, 1994 at the age of 24. Dr. Johnson was a 1994 graduate from the University of Saskatchewan's faculty of dentistry and practised in Weyburn, Saskatchewan.

Metzer, Dr. Kenneth G.: A graduate from the University of Saskatchewan's faculty of dentistry in 1975, Dr. Metzer practised in Moosomin, Saskatchewan. He died July 31, 1994.

Plant, Dr. Gary D.: A 1972 graduate from Marquette University School of Dentistry in Milwaukee,

Wisconsin, Dr. Plant joined the College of Dental Surgeons of Saskatchewan in 1981 and was also licensed in Alberta where he practised in the High Prairie area. He passed away in May 1994.

Telford, Dr. R.B. (Bob): Dr. Telford graduated from the University of Oregon Dental School in 1949 after serving in the RCAF from 1942 to 1945, for which he received the British Distinguished Flying Cross. He served as Registrar of the B.C. College of Dental Surgeons in 1976 and 1977. He also taught prosthodontics at the UBC Faculty of Dentistry, part-time, from 1969 to 1978. After 40 years of practise in West Vancouver, he retired in June, 1989. Dr. Telford died on June 23, 1994.

Young, Dr. Sai-Man T.: Dr. Young graduated from the University of Western Ontario's faculty of dentistry in 1982. Dr. Young practised in Richmond B.C. until he passed away on June 6, 1994.

BOOK REVIEWS

Diseases of the Periodontium

Edited by H. N. Newman, T. D. Rees, D. F. Kinane

1993, Science Reviews Limited, Northwood, England; \$57.00. ISBN: 0-905927-93-1.

This hard cover text comprises the proceedings of a pre-IADR Symposium held in June 1992. The information is presented in 14 chapters, each of which has been contributed by an individual author. The material includes a range of conditions which may affect the periodontium, and is essentially a text of oral medicine and oral pathology. The text comprises 295 pages, with each chapter subdivided into several sections with relevant topics.

The first chapter is devoted to an exhaustive classification of conditions — termed periodontal diseases — all of which may affect the periodontium. While any of the conditions listed may affect the periodontium, I am not of the opinion that all are periodontal diseases per se. However, this may be only a difference with regard to semantics. The classification includes, among others, inflammatory periodontal disease, developmental and systemic diseases, traumatic lesions, malignancies, blood and immunologic disorders.

The remaining chapters are devoted to a variety of conditions/diseases, all of which may have an effect upon the periodontium. The relationship of the following conditions or diseases to the periodontium is discussed: genetic and immune aspects; systemic factors; specific infections; drugs; neoplasia; hematological disorders; dermatology and auto immune disease; cysts and epulides; and cementum disorders and osteodystrophies.

In most cases, the chapters are illustrated with clinical or radiographic examples, tables, diagrams or photomicrographs, all of which are of excellent quality. Each chapter has an extensive bibliography, however, the index lists only the major topics, without sub-headings, which means that the reader must look up each individual page number until

the desired material is found. Information from the discussion periods is included at various intervals throughout the text.

The presentations are concise, well-researched and referenced and very readable. As one who wishes to derive the most information for the least amount of reading, I appreciated the quality and succinctness with which the subject matter was written and presented.

In my opinion, this text would be most useful as a reference source for graduate/post-graduate students in oral medicine or oral pathology or for those teaching in the disciplines. It is not suitable as a primary textbook in oral pathology or oral medicine for undergraduate dental students.

Reviewed by:

Helen Scott, B.Sc., DDS, Dip. Perio., M.Sc., RCDC (M)
Assistant Professor, University of British Columbia.

Textbook and Color Atlas of Traumatic Injuries to the Teeth, third edition

by J.O. Andreasen and F.M. Andreasen

1994, Times Mirror Professional Publishing; 760 pages, \$319.50. ISBN: 0-8151-0127-9.

This third edition of the textbook, *Traumatic Injuries of the Teeth*, represents an improvement over the excellent second edition published in 1981. The 22 chapters cover the areas of trauma and wound healing, child abuse, tooth fractures, luxation and avulsion injuries, endodontic and orthodontic management of traumatized teeth, resin-retained bridges, conventional bridges, dental implants, prevention of dental and oral injuries and prognosis of traumatic injuries.

The book includes information on basic oral histology, pathology and microbiology and relates these basic sciences to the clinical setting. At the end of each chapter there is an extensive list of mainly European references and a useful summary. At the end of the book there are five

indexes that could be used to guide the reader through an emergency record chart for acute dental trauma, a clinical examination to be used at the time of initial examination and at subsequent follow-up examinations, a summary of the radiographic findings associated with various types of luxation injuries, recommended follow-up procedures, and a cost-effectiveness of the different types of treatment solutions. A page sequencing error in the review copy of the book is being rectified, according to the publishers.

This is, without a doubt, the best book I have read covering most aspects of traumatic injuries to the teeth. The book is superbly illustrated with many color photographs and drawings. Although expensive, the book is highly recommended for dental students, dentists and specialists as a textbook and atlas of traumatic injuries to the teeth.

Reviewed by:

Richard Price, BDS, DDS, M.Sc.
Associate Professor, Department of Restorative Dentistry, Dalhousie University.

Oral Radiology Principles and Interpretation, third edition

by Paul W. Goaz and Stuart C. White

1994, Mosby-Year Book Inc., St. Louis
Hard cover, 735 pages with black and white photographs, \$85.25. ISBN: 0-8016-7295-3.

This book is written primarily for dental students and general dentists, but oral and maxillofacial radiologists and other dental specialists will also find it useful. It is an update of the second edition, which was published in 1987.

The authors have omitted chapters from the previous edition about the origins of dental radiology, quality assurance, and endodontic radiology. Some of the material from these lost chapters has, however, been included in other chapters.

The chapter on specialized radiographic techniques has been updated, with CT, MRI, ultrasound, and

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nuclear medicine receiving greater emphasis. The re-written chapter on the principles of image interpretation is noteworthy for its practical approach. The chapter on the temporomandibular joint has updated sections on arthrography and internal derangements; these have several excellent new illustrations in them.

Four new chapters have been added — the one on guidelines for prescribing dental radiographs is a welcome addition to the section on radiation safety and protection. The topic of radiographic infection control also receives special emphasis. The new chapters on salivary gland radiology and implant radiology provide current information about these procedures in a concise manner.

Numerous other additions and revisions within previously existing chapters show that the authors have paid attention to detail to make the book better. For example: Chapter 1, on radiation physics, has a new diagram of an X-ray tube head; Chapter 2, on radiation biology, has revised sections on dental risk implications and carcinogenesis; and Chapter 5, on X-ray film, intensifying screens, and grids, includes a more detailed explanation of phosphors with special emphasis on rare earth screens.

Reduced emphasis on quality assurance through the loss of that particular chapter is regrettable, but the important information on this topic is still included in other chapters within the book. The quality of the reproduction of radiographic images throughout is excellent. The book is easy to read, although some headings (eg. names of specific lesions in the chapters on cysts, tumors, etc.) could be better highlighted.

The authors should be commended for their work in updating and improving the previous edition. The new edition will prove to be a worthwhile addition to the bookshelves of dental students and practitioners.

Reviewed by:

Garnet V. Packota, DMD, Dip. Oral Rad., M.Sc., FRCD(C)
Head of Oral Radiology, College of Dentistry, University of Saskatchewan.

ABSTRACT

Some Mouth Rinses Just Don't Wash

Though mouth rinses may leave your mouth with a clean, fresh taste, some may be harmful, concealing the bad breath and unpleasant taste that are signs of gum disease, according to the Academy of General Dentistry (AGD).

Mouth rinses are classified by the U.S. Food and Drug Administration (FDA) as cosmetic, therapeutic or a combination of the two. Cosmetic rinses help remove oral debris before or after brushing, temporarily suppress bad breath, diminish bacteria and refresh the mouth. Therapeutic rinses have the benefits of their cosmetic counterparts, but also contain an added active ingredient that helps protect against some oral diseases.

"Before you use a mouth rinse you should know what they will — and won't — do for you," says John C. Brown, DDS, a spokesdentist for the AGD. "You should also know how to use them. When using an anticavity or an antiplaque rinse, be sure the teeth are as clean as possible, to reap the full preventive benefits of the liquid fluoride." Most rinses are effective oral antiseptics that freshen the mouth and curb bad breath for up to three hours. But initial studies have shown most over-the-counter antiplaque rinses and antiseptics aren't much more effective against plaque and periodontal disease than rinsing with plain water. Studies show certain antiplaque rinses are only 20 to 25 per cent effective, at best, in reducing the plaque that causes gingivitis.

Habitual use of antiseptic mouthwashes that contain high levels of alcohol (from 18 to 26 per cent) has been linked to oral and throat cancer, and can cause intoxication if swallowed or used excessively, or if used by children. Many prescribed rinses with more concentrated formulas can lead to ulcers, sodium retention, root sensitivity, stains, soreness, numbness, changes in taste sensation and painful sores.

"Using a mouth rinse is no substitute for regular dental check ups and proper home care," Dr. Brown said. "The AGD recommends brushing with a fluoride toothpaste and flossing twice a day. If done consistently and properly, the brushing and flossing, along with routine trips to the dentist, should be enough to fight tooth decay and gum disease."

If you're more apt to trust remedies prepared at home, try these alternatives to brand name cosmetic rinses:

- 1. Saline solution rinse = 1/2 tsp. salt + 8 oz. water; for a stronger solution use 1/2 tsp. salt + 4 oz. water.*
- 2. Sodium bicarbonate = 1/2 tsp. baking soda + 8 oz. water.*
- 3. Peroxide rinse* = 4 oz. hydrogen peroxide + 4 oz. water.*

**Precaution : only use a four per cent concentration, as listed on the bottle, and not a 20 per cent solution commonly used for bleaching hair. Always mix hydrogen peroxide with an equal amount of water, and never rinse with the product alone.*

Dentists discourage prolonged or overconcentrated use of hydrogen peroxide, which can create a "black, hairy tongue" effect (in which the taste bud "bumps" on the back of the tongue become blackened), and can possibly injure soft tissues in your mouth over time.

Source: Academy of General Dentistry Dentalnotes — May 1994 -1

PROFESSIONAL STATUS

At the last session of the Quebec Legislature the City of Montreal was given authority — for special revenue purposes — to levy a tax of two per cent on all sales of merchandise (with few exceptions) of a value in excess of 10 cents within the limits of the Municipalities under the control of the Metropolitan Commission. Every firm or individual affected by this Sales Tax By-law No. 1336 was required to register with the city as a collector of the tax, exact the tax from the person to whom the sale might be made (the vendor not being allowed to absorb the tax) and remit the same monthly along with a sworn statement to the Collector of Taxation at the City Hall.

The Board of the College of Dental Surgeons felt that as professional men this by-law did not apply to them and advised the authorities to this effect. We also suggested to our confrères that they take no notice of the by-law until the board was satisfied that they were liable for the tax. After numerous interviews with the City Financial Department we were finally given a ruling which virtually classed the members of the dental profession — for the purposes of this Sales Tax By-law — as retail sales merchants. The city insisted that a two per cent tax be collected from each of our patients on the cost of all materials used in the treatment of each individual case. Naturally we opposed this ruling and in order to clarify the situation the city was invited to take an action against one of our confrères, as a test case.

In August, Dr. Denis Forest, Registrar of the College, was summoned to appear before Judge Leblanc of the Recorder's Court for failing to comply with the City's Sales Tax By-Law.

Dr. Forest's contention was that as a professional man he was giving his patients a health service in the same way as a physician or surgeon and that as such our Quebec Dental Law gave him the same privileges and exemptions as those of the medical profession — that the restorations he was required to make in the practice of his profession were nothing more nor less than the application of a pre-

scription required in the treatment of each case he handled, whether it be the replacing of a lost or broken tooth or the correction of any pathological condition which might necessitate the use of various materials or drugs in the course of the treatment — that no distinction should be made between the dentist and the physician or surgeon so far as the application of this Sales Tax By-law was concerned — that the cost of the materials and drugs which he used in his professional duties was altogether out of proportion to the fees charged for the services and that in any case if he were legally subject to any tax whatsoever it should be collected from him on the materials, etc., and by the merchants from whom he purchased his office equipment.

While the total individual tax — so far as we as dentists might be concerned — would not have reached any considerable amount in the majority of instances, the Board felt that a *Principle* was at stake and that we had every reason to oppose the city's ruling in this matter.

The judgement handed down by the Court ought to be a source of gratification to those of us who feel that our professional status has been definitely established and that we have been legally recognized on the same basis as other professional bodies. Judge Leblanc's decision follows:

"Surgeon dentist, under chapters 209 and 216 of the Revised Statutes of Quebec, are professionals who rent their services for which they have a right to charge fees, and while, in the exercise of their profession, they are sometimes obliged to furnish their clients artificial substitutes which they have manufactured themselves, this to replace a lost or dead organ, it seems to this court that in such a service there is no element of sale as provided for by the aforementioned statute and by-law, and in consequence court concludes that the complaint must be dismissed."

— G. Guelph Armitage,
President,

Quebec College of Dental Surgeons,

Diamond Jubilee of Publication

Throughout 1994, the *Journal of the Canadian Dental Association* celebrates 60 years of publication as the authoritative "voice" of den-

tistry in Canada. Each month, in commemoration of its Diamond Jubilee, the *Journal* will reprint an article from Vol. 1, 1935.

OCTOBER, 1935

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What You Should Know About Risk And Your RRSP

Risk has different connotations in various financial contexts. In personal financial planning, for example, insurance is often referred to as an element of "risk management." In the investment world, capital invested in new enterprises is called venture capital or "risk capital."

In registered retirement savings plans (RRSPs), risk is associated with investment funds (low risk or high risk, for example) and with you (your personal degree of risk tolerance).

However, before covering these two aspects, there's another important risk issue on many people's minds these days: Can the state of an insurance company's financial health put your RRSP money at risk?

Risk: A Topical Concern

Recently, Canada's financial community was stunned when news broke about Confederation Life's demise. Of course, Confederation Life policyholders were especially concerned — and now, in the aftermath, anyone with investment dollars held with an insurance company wants to know how safe their money is. In fact, some dentists have called CDSPI to ask about the security of their funds in the CDA RSP.

CDA RSP participants can rest assured — money in the CDA RSP is quite safe. In the CDA RSP GIC Fund, the Canadian Life and Health Insurance Compensation Corporation (CompCorp) protects up to \$60,000 of each Canadian participant's funds in the event the

insurance company holding your money becomes insolvent.

If you have more than \$60,000 in the GIC Fund, you may find it helpful to know that Imperial Life, which manages the CDA RSP GIC Funds, has held an A+ credit rating since 1975 — a rating reconfirmed in June this year by A.M. Best. And in January, 1994, Imperial Life merged with Desjardins Financial, which holds a AA rating from Standard & Poors. The Desjardins Laurentian Financial Corporation is now Canada's sixth largest financial institution.

The money you've saved in the other five investment funds is also secure. By law, the money in these funds is segregated from the insurance company's other assets (which is why they're officially termed "segregated" funds). The individual securities are held by an independent trustee and registered in the name of the plan. All of this means that even in the extremely unlikely event that the insurance company became insolvent, your money would be protected.

Now back to the real meaning of risk in RRSPs — the risk associated with investment funds, and your personal risk tolerance.

Degrees Of Risk In Investment Funds

In the CDA RSP, participants can invest in six different funds. Each fund's potential rate of return is linked to its degree of risk — the higher its potential return, the higher its risk. Here's a rundown of the CDA RSP funds and their respective risk factors:

- 1 The GIC Fund** is the most secure, since funds are invested in term deposits with guaranteed rates.
- 2 The Money Market Fund** is also extremely safe, because it invests in government treasury bills, bank deposit certificates and other low-risk commercial paper. However, this fund cannot be considered as low risk as the GIC Fund, simply because rates are not guaranteed.
- 3 The Bond and Mortgage Fund**, risk-wise, is midway between guaranteed funds and stock funds. Returns — which are dependent on interest rates — will fluctuate over time, but generally not as greatly as with stock funds.
- 4 Stock funds**, like the CDA RSP Common Stock Fund, have historically outperformed other investment vehicles over time, but they can be volatile and you must be willing to ride out any low periods. The CDA RSP Common Stock Fund is conservatively managed to minimize risk.
- 5 The Aggressive Equity Fund** invests in small, emerging companies with strong potential for significant growth. It's an aggressively managed fund, with a high potential rate of return — but it's most definitely high risk.
- 6 The Balanced Fund** is like a combination of a bond and mortgage fund, money market fund, and common stock fund. Accordingly, its degree of risk

and potential for higher returns fall between the stock funds and other more secure funds.

It's important to understand each fund's degree of risk. You need this knowledge to properly determine your personal investment mix appropriate to each stage of your life.

Your Personal Risk Tolerance

Generally, the more years you have before retirement, the greater percentage of money you should contribute to higher risk funds. Over the long-term with stock funds, you can ride out any lower periods in the stock market, and still — judging historically — come out ahead of other investment vehicles. As retirement nears, most people want to take fewer chances, and they invest more money in higher security funds. Your age, therefore, is usually the most important factor in determining your risk tolerance.

Other critical factors are your personal nature and financial situation. Some people are — quite simply — more risk-averse than others. For example, a dentist just starting out may feel uneasy about investing in stocks and therefore would contribute a smaller percentage of his or her investment capital to stock funds, and more to the higher security funds. On the other end of the spectrum, a 60-year-old dentist with a sizeable retirement program outside of RRSPs, who plans to roll his or her RRSPs over into a RRIF, could hold the majority of his or her RRSP money in stock funds. Risk tolerance, as you can see, is highly individual.

In summary, the risk factor in the CDA RSP is all about the investment funds and you. Knowing each fund's degree of risk is the starting point. Then you must consider your own risk tolerance according to your number of years before retirement, and the degree of risk you can accept, based on your nature and financial situation.

Understanding risk is essential to making the most of your registered retirement savings plan, and making sure it's right for you. ■





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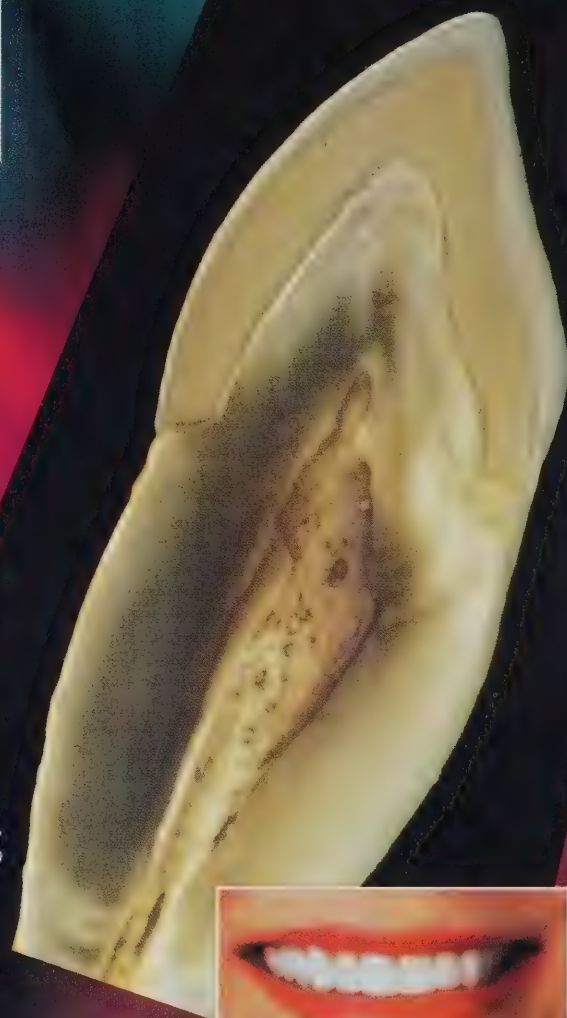
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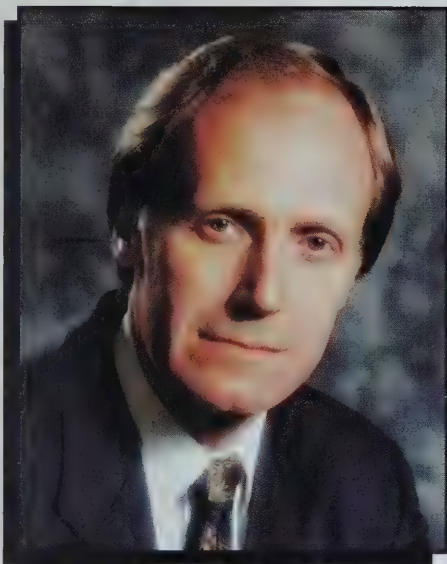
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Dr. Bryun Sigfstead

Meet Dr. Bryun Sigfstead: CDA President (1994-95)

Terry Davis, BA, Dip. J.

If you ask Dr. Bryun Sigfstead why he wanted to become president of the Canadian Dental Association, chances are he'll tell you what Jacques Plante is reputed to have said about standing between the pipes for the Montreal Canadiens.

Plante, asked by an inquisitive reporter why he wanted to be a goalie for a National Hockey League team, apparently responded that he really wasn't sure why anyone would want the job. After all, he said, everytime you make a mistake a red light goes on behind you, and 15,000 people boo.

What Plante didn't talk about that day was the feeling you get when you win, when you're skating around the Forum, carrying the Stanley Cup in your arms. The pride, the elation and the satisfaction that come with success.

Being president of CDA will be a little like that, Dr. Sigfstead says. Although there's no red light that flashes on top of the CDA headquarters building when a blunder occurs, members have a way of letting the president know that things have gone wrong. And although CDA's headquarters won't necessarily be surrounded

by applauding fans when you've done something really good, people have a way of thanking you for a job well done. And you feel the same pride, elation and satisfaction.

The other similarity between hockey and organized dentistry, of course, is that success depends on team work. The goalie and the president may take the rap when things go wrong, and they may accept the kudos when victory is at hand, but winning really depends on the collective efforts of a group of diverse people all working together as a unified team. Winning requires trust, teamwork, and a collective vision.

Dr. Sigfstead's vision is simple. He wants to be involved in making dentistry and the Canadian Dental Association better.

Success in this endeavor, not surprisingly, won't be judged on a easily-evaluated statistic like hockey's goals against average, but on how well Dr. Sigfstead's team meets the objectives he has established for his presidential year. As he sees it, a winning season will depend on: attracting more new and recent graduates to join CDA; ensuring that members

***... a winning season will depend on:
attracting more new and recent graduates to join CDA; ensuring that members receive good value for their membership dues; and providing strong, effective leadership in the area of issues management.***

receive good value for their membership dues; and providing strong, effective leadership in the area of issues management.

"Issues affect every dentist in Canada," said Dr. Sigfstead. "If we manage these issues well, we can establish a sense, among the member dentists, that we are there because of them and for them — a sense that they are the owners of this association."

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Dr. Bryun Sigfstead is installed as president of the Canadian Dental Association by Dr. Raymond Wenn.

While much of Dr. Sigfstead's issues management activity this year will focus on CDA's ongoing campaign against the taxation of employer-paid dental plan premiums, he will also be monitoring other areas of concern, particularly amalgam toxicity, fluoride and infection control.

Winning the tax fight will require a true team effort, says Dr. Sigfstead, with dentists from across Canada pulling together and lending a hand. The key to victory will be two-way communication between CDA and its members from across Canada, and gaining the support and cooperation of dental patients. Nothing short of the oral health of Canadians is at stake.

"We have a public responsibility, as our mission statement says very clearly, for the 'promotion and provision of optimal oral health for Canadians.'

"If we are to speak for dentistry in this country, our strength lies in numbers. There is so much more that we can accomplish as a unified body with a common purpose. It is necessary that we, as individuals, realize our personal responsibility toward our profession and support it with our membership."

Dr. Sigfstead comes to the position of CDA president well-versed in the need for unity and strong leadership. Starting with his tenure as president of the Edmonton and District Dental Society (1977-78), he's held the chief elected officer's post with the Alberta Orthodontic Society (1978-79), the Western Canada Orthodontic Society (1978-79), and the Alberta Dental Association (1984-85). Nationally, Dr. Sigfstead has been a member of both CDA's board of governors and its executive council since 1987. He has also served as chairman on a number of CDA committees, notably the ad hoc Working Group On Membership Concerns.

On a volunteer level, Dr. Sigfstead chaired the United Way's professional division fundraising drive in 1977, and was the president of the University of Alberta General Alumni from 1993-94. He is currently a member of the University of Alberta Alumni Council.

Given his degree of involvement in organized dentistry, you might think that Dr. Sigfstead entered dental politics deliberately, with a specific, long-term goal in mind. But he really had no idea

"... our strength lies in numbers. There is so much more that we can accomplish as a unified body with a common purpose ..."

what he was getting into, or where it would lead, when he agreed to stand for election to the board of the Edmonton and District Dental Society in 1973. Like many dentists, he was asked to run by his peers, he wanted to give something back to his profession, and he viewed his nomination as a step in that direction. And before he knew it, he'd taken another step, and another, and another.

Dr. Sigfstead's journey along the road to the CDA presidency began in small-town Saskatchewan. Born August 8, 1944, in Rose Valley, he grew up among grain elevators and wheat fields. But farming wasn't in his blood.

On graduation from high school, he immediately enrolled in pre-dentistry at the University of Saskatchewan.

In those days there was no dental school in Saskatchewan, and Dr. Sigfstead soon found himself enroute to Edmonton and the University of Alberta. After earning his DDS in 1967, the young dentist returned to Saskatchewan to establish a general practice. But Edmonton had made an impression on him. After less than a year in practice, he decided to leave Saskatchewan and return to Alberta's capital city.

For the next three years, Dr. Sigfstead practised general dentistry in Edmonton and taught part time at the University of Alberta's dental clinic. But in 1971, after consulting his colleagues, he returned to the University of Alberta to pursue postgraduate studies in orthodontics.

When he graduated, two years later, Dr. Sigfstead established a specialty practice in orthodontics — and quickly found himself in the fast lane of organized dentistry's volunteer highway.

"It was shortly after entering practice in 1973 that I became involved in my local society, the Edmonton and District Dental Society. From that time onward, being involved with my dental society, my professional association, or my national association has just been part of my life."

Another key part of Dr. Sigfstead's life is his wife, Dianna, and his blended family. Married in November 1982, the couple have three sons: Curt, 27, lives in San Francisco and works in the adventure travel industry; Derackk, 24, holds a BA from the University of Western Ontario and lives in Whistler, B.C.; and Todds, also 24 and a Western graduate, is currently pursuing an outdoor adventure program at Caribou College in Kamloops, B.C.

Fit and lean, Dr. Sigfstead enjoys skiing, curling, sailing, biking and reading. He's particularly enthusiastic about squash, however, because he loves the game and feels that it may be the most rewarding recreational sport in

"Success can mean bringing about a positive change, or in many circumstances it can mean simply maintaining the status quo . . ."

terms of the opportunities it provides for both fitness and camaraderie. But given the goals he's set for himself as CDA president, Dr. Sigfstead isn't likely to find much time for skiing or squash over the next year.

"I would like to see continued increased participation in CDAnet, both on the part of the insurers and on the part of dentists. The establishment of an electronic claims network has taken an extreme amount of effort by some members of our profession, a large investment by our dental associations, and has had many ups and downs through its infancy. I believe that being involved with CDA through the beginning years of CDAnet is the closest a man can come to understanding childbirth."

The first task on Dr. Sigfstead's list, as mentioned, will be to lead CDA's campaign against the taxation of employer-paid dental plan premiums. He knows that it won't be easy to step into the front lines and assume the leadership role from Dr. Raymond Wenn, CDA's past-president, but he's ready, willing and able to take on the task.

In fact, Dr. Sigfstead's philosophy on issues management in general, and the tax issue in particular, is simple and straightforward: "Success can mean bringing about a positive change, or in many circumstances it can mean simply maintaining the status quo . . . This year we will be faced with taxation issues, brought on by a finance minister desperate to raise more dollars for the government coffers. Win or lose, we

must do our very best in this area."

Dr. Sigfstead knows what it takes to do and be your best. Despite devoting countless hours to organized dentistry, he has also found time to provide much-needed orthodontic services to people in Northern Canada.

"For the last 19 years, I have travelled to Yellowknife once a month to do orthodontics for three days. For approximately seven years, I travelled to Inuvik once every six weeks . . . There is no doubt that this has been a rewarding part of my practice life. To be able to provide a service to an area that doesn't have the service, but where it is really needed and desired, can provide a great deal of satisfaction.

"One can easily rationalize and say 'I'm very comfortable just seeing my patients at my office.' However, I often think to myself that it is really me who has gained by going into the North to provide dental services. You get a very quick appreciation for how large this country is, and how scarcely populated it is, and how beautiful it is in its pristine state."

Talking to Dr. Sigfstead, it's easy to see why the North appeals to him. A quiet, caring man, he describes himself as a good listener, and a committed, dedicated person. He's also a leader who recognizes the value of teamwork and the strength of unity.

"As an association bringing together dentists from as diverse a country as Canada, we know that there are many differences. But it is our commonalities that make us strong."

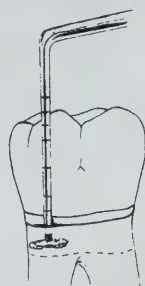
Jacques Plante brought the face mask to hockey and revolutionized the game. In the next year, Dr. Sigfstead will bring sound, reasoned leadership to CDA and organized dentistry. He will captain a winning team of hard-working volunteers and staff to "lead and manage dentistry in this country in the very best way it can be directed."

It promises to be an exciting season. ■

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PERIODONTICS



Toothbrushes: Manual and Electric

J.N. Hoover, BDS, PhD

D. Singer, DDS, PhD

ABSTRACT

Newer designs of manual and electric toothbrushes are briefly described. It is difficult to conduct meaningful clinical studies to detect the apparently small differences between these devices. Recommendations that dentists make to their patients should therefore be based on individual patient considerations.

SOMMAIRE

Voici une brève description des nouveaux modèles de brosses à dents manuelles et électriques. Comme il est difficile d'effectuer des études cliniques sérieuses pour voir les différences apparemment négligeables entre elles, les dentistes doivent faire des recommandations à leurs patients en fonction des besoins particuliers de chacun.

Introduction

Tooth brushing is the most efficient and common method of removing and preventing supragingival dental plaque.¹ It's also a documented fact that millions of toothbrushes are sold annually in North America.

With the myriad of toothbrushes available in the marketplace today, dentists are frequently asked by patients to recommend a specific brand of toothbrush. In fact, the public is constantly bombarded by print, radio and televi-

sion advertising promoting a wide selection of dental aids, including toothbrushes. Many Canadians are probably confused by it all. It is therefore useful for clinicians to be familiar with the specifics and efficacy of various toothbrushes so that they can advise their patients appropriately.

A variety of manual and electric toothbrushes have been developed and marketed over the years. Not surprisingly, the respective manufacturers of these products tend to claim that their toothbrush has superior plaque removing properties. The aim of this paper is to present a short description of the scientific literature pertaining to the newer types of toothbrushes, and to attempt a comparison between manual and electric toothbrushes with regard to their plaque removing ability.

Manual Tooth Brushes

A number of new toothbrushes have been developed recently. Variations in the design of these brushes involve the type of bristle material used; the length, diameter and number of fibres in the brush head; the number and arrangement of bristle tufts; the length and trim design of the brush head; the angulation of the brush handle or neck; and the length or size of the handle.

Generally, new toothbrush designs are initially evaluated by laboratory studies, followed, if the

results appear promising, by clinical studies. Laboratory studies allow more stringent standardization of important variables and can be accomplished more quickly and less expensively than clinical studies. However, controlled clinical field studies are ultimately required to determine if the results obtained in the laboratory really make a difference in gingivitis occurrence during every-day in-home use.

It is impossible to compare all types of manual toothbrushes within the scope of this review. Therefore, only some of the more specialized and innovative toothbrushes will be presented.

The *end tuft* brush is designed for post-surgical and special maintenance problems. It has a small brush head and soft .008 nylon bristles to allow controlled access to furcations, implants, orthodontic bands and the distal aspects of second or third molar teeth.

Orthodontic toothbrushes are designed with depressed centre rows to facilitate the removal of plaque around orthodontic appliances.

Sulcular toothbrushes have two rows of flat, trimmed, ultrasoft .007 rounded bristles, which supposedly remove plaque in the crevicular area.

A new *deep-grooved toothbrush*, the *Improve*, was designed to make plaque removal more efficient in those areas most likely to exhibit plaque, such as the



mandibular lingual surfaces and the buccal aspects of maxillary molars. A blind cross-over study² comparing the deep-grooved Improve brush with a conventional flat surface toothbrush indicated the superiority of the test brush, especially for the reduction of plaque in the molar teeth.

Double-headed toothbrushes have been developed to facilitate the removal of plaque on the buccal, lingual and occlusal surfaces simultaneously. A two-way, blind, cross-over study³ to evaluate the efficacy of this type of brush was conducted in 11- to 13-year-old boys. The results indicated that the double-headed brush was superior to the single-headed toothbrush on the lingual surfaces. Buccally, however, no difference was found. There were also no differences found between particular groups of teeth. Similar results were obtained among adult subjects.^{4,5}

Colgate's *Precision* brush was designed to remove plaque at the gingival margin and interproximally, based on an analysis of how people brushed their teeth. This was done by connecting light sources to the ends of commercially-available brushes and to the heads of test subjects. Three-dimensional data were then collected with cameras, and a computer-generated reanimation of people brushing their teeth was created. Recent clinical studies^{6,7} indicate that the *Precision* brush is more effective in the reduction of the overall plaque scores and interproximal plaque than the control toothbrushes.

The *Soladey-2* toothbrush incorporates an N-type semiconductor of titanium dioxide at the neck of the brush. In the presence of light, saturated low-energy electrons in the semiconductor are transformed into high-energy electrons. This results in a reduction of H⁺ ions from the organic acid in the plaque, which eventually leads to the plaque's decomposition.⁸ A blind two-way cross-over clinical trial⁹ indicated that the use of the *Soladey-2* brush resulted in a significant reduction of plaque on the buccal surfaces of all teeth, as compared to the control brush.

The exact nature of the mechanism involved is unclear, and warrants further *in vitro* and clinical investigations.

The design of *Interdental brushes* makes them particularly useful following periodontal surgery, when the patient's interproximal spaces may allow their insertion. In these situations, interdental brushes are often more effective than dental floss,^{10, 11} and typically are more accepted by patients.

Due to the many variables involved, however, such as the design of the brush, brushing procedures, presence or absence of brushing supervision, population differences, scoring procedures and the frequency/length of brushing time, the scientific evidence is still inconclusive as to which type of toothbrush is superior in removing plaque.

A not uncommon side-effect of tooth brushing is gingival recession.^{12,13} At susceptible sites (thin radicular bone, limited gingiva, for example), toothbrush characteristics can influence the incidence of recession. Stiffer bristles,¹⁴ sharp bristle ends^{15,16} and serrated rather than smooth multi-tufted tuft arrangements¹⁷ have all been associated with a higher occurrence of gingival recession and should be avoided.

The requirements of an effective toothbrush have been well reviewed by Park et al.¹⁸ The findings of an FDI working group¹⁹ indicate that, within normal variations, the length and width of a toothbrush head and the shape of the handle (straight or contra-angle, for example) have limited influence on the efficacy of the toothbrush. Generally, a toothbrush with soft, nylon bristles with round-tip ends, a small head (approximately 25.0 mm long by 8.0 mm wide), and a handle that is firm, resilient and resistant to breakage could be used by most patients with minimum trauma to the soft and hard tissues.¹⁸ Children may benefit by using a thicker handle, which would enable them to have a better grasp and thereby improved control of the brush.²⁰

While educating and motivating the patient to employ an effective tooth brushing technique is very important, it is difficult to justify the recommendation of one toothbrush over the other. Difficulties in interpreting the results of various studies, the availability of a variety of toothbrushes and the varying needs of the patient, do not make this decision easy.

Before you can recommend a particular toothbrush, information from clinical comparison studies on populations similar to those in your practice and having the attributes of a randomized clinical trial must be available. Due to the dearth of such studies, it may be more appropriate to allow the patient to make the decision regarding the brand of toothbrush, keeping in mind the general requirements of a toothbrush and the specific needs of the patient, such as the arrangement of the dentition in the arches, the severity of gingival recession, the extent of toothbrush abrasion, the status of the periodontium, and the manual dexterity of the patient.

Electric Toothbrushes

Electric toothbrushes were introduced to make brushing easier and more effective, especially for those with physical or mental handicaps, poor manual dexterity and insufficient motivation. Today powered toothbrushes are available to consumers under several brandnames, including Rota-Dent, Interplak, Braun D5, Plaque Control 2000 and Sonicare.

The *Rota-Dent* has a single tuft of bristles designed to rotate in a manner that resembles the rotary instruments used in a dental office. Its brushing head consists of a central core of stiff bristles surrounded by softer bristles.

The *Interplak* has 10 independently-powered nylon tufts that rotate reciprocally, with each tuft rotating in a direction opposite to that of the adjacent tuft. Each of these tufts is tapered to a point.

The *Braun D5* brush head is round and reciprocates around its long axis, while the *Plaque Control 2000* moves in an elliptical manner.



The manufacturers of the Sonicare brush claim that it is the first electronic toothbrush to significantly reduce plaque and stains through sonic-frequency cleansing. Its soft, rippled bristles vibrate at 31,000 brush strokes per minute.

Recent studies comparing electric toothbrushes with manual brushes report conflicting findings with respect to the efficacy of electric toothbrushes.²¹⁻²⁶ Lundergan et al²² evaluated interproximal scores and found no difference between the electric toothbrush (Interplak) and the manual toothbrush. Howorko et al,²⁴ in a blind, two-way cross-over trial involving 20 adults, failed to demonstrate a difference in plaque removal between the Interplak and the control brush, other than in the distal surfaces of the maxillary teeth. However, Baab and Johnson,²⁷ using a modification of the O'Leary Plaque Control Record, reported that although the Interplak failed to remove plaque on the buccal and lingual surfaces significantly better than the control brush, its greatest benefit was at the interproximal surfaces. Similar results attesting to the superiority of the Interplak over the manual toothbrush have been reported.²⁸

Weijden et al,²⁵ at the end of an eight-month trial, concluded that the Braun electric toothbrush was more effective than a regular manual brush, while Glavind and Zener²¹ found no difference between the Rota-Dent electric toothbrush and manual brushing. Emiling et al,²⁹ who assessed dental stain removal in a group of 19 subjects over a four-week period, reported that subjects using the Sonicare electric toothbrush were able to achieve 80 per cent stain (extrinsic coffee, tea or tobacco) reduction, while only a 40 per cent reduction was obtained by those using a manual brush.

As this brief review of the existing literature makes clear, further research needs to be done before any firm conclusions can be drawn with regard to the efficacy of electric toothbrushes. Many of these studies may have been performed under conditions of strict scientific protocol, and therefore

eliminated variables such as long-term patient compliance, the type and amount of dentifrice used, and the duration and frequency of brushing. These variables could have influenced the results if the study had been conducted under conditions resembling ordinary daily life.

Even in controlled trials, variables such as the length of the study (short-term versus long-term), the selection of the population sample, the method of providing oral hygiene instructions (written versus provided verbally by a professional), lack of controls, lack of a blind examiner (to avoid bias), non-random assignment of treatment, and lack of a regular reinforcement schedule may influence the results.

The clinician is therefore cautioned to critically review any information attesting to the efficacy of a new toothbrush, keeping in mind some of the above-mentioned variables, before recommending a particular brand over another. It may also be useful to consider certain features of an electric toothbrush such as ease of use, the size and shape of the handle, the sound produced in use, charging time, controls (which a handicapped person should be able to manipulate easily), the availability of replacement heads and, finally, the cost and mechanical reliability of the product.

In summary, the existing data appear to indicate that no one toothbrush, whether manual or electric, is vastly superior than the others in removing dental plaque and achieving gingival health. There is still no conclusive evidence that electric toothbrushes are better than manual toothbrushes. However, electric toothbrushes could still be a very useful adjunct for patients with decreased motor skills, the physically handicapped, the geriatric patient, and individuals undergoing extensive orthodontic therapy. The practising dentist should evaluate each individual patient and recommend toothbrush choices accordingly. ■

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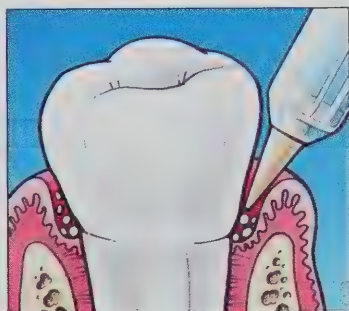
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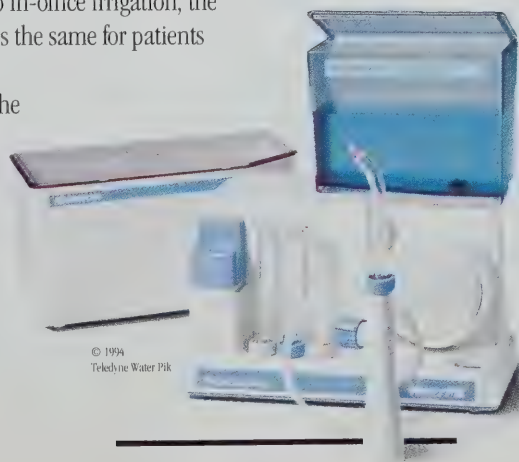
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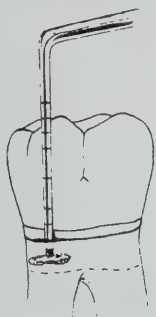
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PERIODONTICS



The Subepithelial Connective Tissue Graft For Root Coverage in Periodontal Therapy — Rationale And Technique

Dr. Albert F. Holthuis, DDS, MSD

ABSTRACT

Gingival recessions are frequently of esthetic concern to patients and dental practitioners. Advances in periodontal surgical techniques allow the dentist to choose between several treatment modalities. Treatment aims, indications and limitations of different procedures for root coverage are outlined.

Root defects with wide or deep-wide gingival recessions can be successfully treated with a subepithelial connective tissue graft. A description of the subepithelial connective tissue graft technique for root coverage of denuded root surfaces is presented and the rationale is discussed.

SOMMAIRE

Pour les patients et les praticiens dentaires, les retraits gingivaux posent souvent des problèmes d'ordre esthétique. Heureusement, grâce aux progrès des techniques chirurgicales en périodontie, le dentiste a le choix entre plusieurs traitements. Dans cet article, on indique les objectifs de ces traitements, les indications et les restrictions des différentes procédures utilisées pour recouvrir des racines dénudées.

On peut, en greffant des tissus conjonctifs sous-épithéliaux, traiter avec succès les problèmes radiculaires présentant des retraits gingivaux larges et/ou profonds. Tout

en la justifiant, on décrit cette technique qui sert à recouvrir les surfaces dénudées des racines.

Introduction

In periodontics, gingival recessions have traditionally been treated with a free autogenous gingival graft, a laterally- or coronally-positioned pedicle flap or, to a lesser extent, with a double-papilla pedicle flap procedure. The success of treatment varies from complete to partial root coverage, depending on the technique used, as well as on the form and extent of the defect and the surrounding supporting tissues. In all cases, the treatment aims for these procedures are:

- 1 to cover the denuded root surface;
- 2 to provide gingival tissue that has a gingival form amenable to good oral hygiene procedures, and a color that blends in well with the surrounding tissues;
- 3 to establish a (keratinized) oral gingiva of sufficient thickness.

The free autogenous gingival graft procedure is predictable for establishing or increasing the "attached" portion of the vestibular/oral gingiva. However, the technique is not equally predictable when it is used to cover a root surface. The survival of a gingival graft placed over a denuded root surface depends on the revascularization of the transplanted tissue. Critical factors are the width

and depth of the defect, as well as the bridging phenomenon — the ability of adjacent portions of the recipient bed to form a collateral circulation over the avascular root surface.¹

For many years, Sullivan and Atkins¹ classification of gingival recessions as shallow-narrow, deep-narrow, shallow-wide and deep-wide defects provided a guideline for patient selection and treatment. The success rate of the free autogenous gingival graft procedure has been reported as a 70 per cent coverage of lesions with a width and a depth in apical direction of 3.0 mm or less.²

Holbrook and Ochsenbein studied 50 cases.³ Eleven patients had a defect of less than 3.0 mm, 30 patients had one of 3.0 to 5.0 mm, and nine patients had a recession greater than 5.0 mm. There were 22 recessions with full coverage (44 per cent) and recessions of 3.0 to 5.0 mm had a coverage of 80.6 per cent.

The technique used by Holbrook and Ochsenbein is based on thorough root planing, reduction of root convexity, and preparation of a recipient bed of sufficient dimensions. They recommended a graft thickness of 1.5 to 2.0 mm and extensive suturing, with stretching of the graft and close adaptation of the transplanted tissue to the recipient bed.

Sullivan and Atkins' classification has recently been replaced. The new classification, developed

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Fig. 1: Preoperative photograph showing the upper right cuspid with a recession.

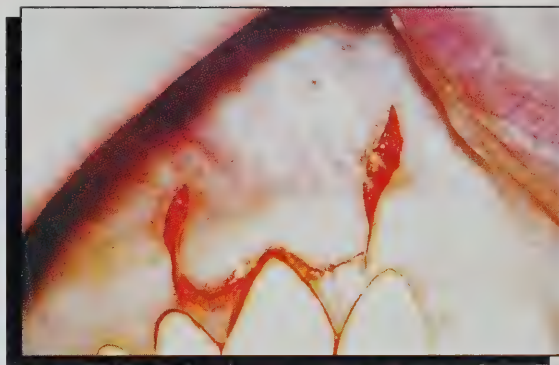


Fig. 2: Pedicle flap incisions. A scalloped horizontal incision and two vertical releasing incisions have been made.

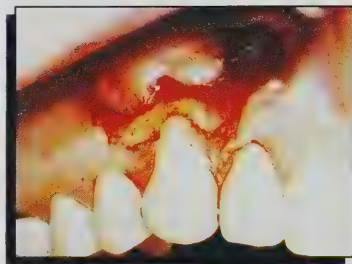


Fig. 3: Photograph showing the partial thickness flap elevated and the gingivectomy in the interdental spaces completed.



Fig. 4: Photograph of the palate, the location of the donor site and the incisions in the bicuspid area.

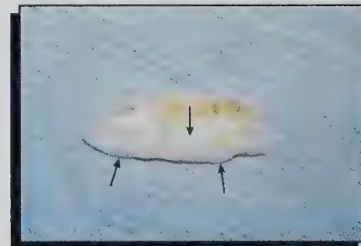


Fig. 5: The graft has been removed from the donor site. The arrows indicate the epithelial border that will be removed from the connective tissue with sharp dissection.

by Miller,⁴ is based on the relation of the recession to the mucogingival junction, bone and/or soft tissue loss in the adjacent interdental areas, and extrusion or malpositioning of the teeth. Four classes of recession are recognized:

Class I: Marginal tissue recession that does not extend to the mucogingival junction. There is no periodontal loss (bone or soft tissue) in the interdental area, and 100 per cent coverage can be anticipated.

Class II: Marginal tissue recession extending to or beyond the mucogingival junction. There is no periodontal loss (bone or soft tissue) in the interdental area, and 100 per cent root coverage can be anticipated.

Class III: Marginal tissue recession extending to or beyond the mucogingival junction. Bone or soft tissue loss in the interdental area is present, or there is malpositioning of the teeth that prevents the practitioner from attempting 100 per cent root coverage. Partial coverage can be anticipated.

Class IV: Marginal tissue recession extending to or beyond the mu-

cogingival junction. The bone or soft tissue loss in the interdental area and/or malpositioning of teeth is so severe that root coverage cannot be anticipated.

The anticipated level of the graft margin is at the cemento-enamel junction when there is no loss of interdental bone and proximal tissue attachment. Miller's results showed a total coverage in Class I and II defects in 71 out of 79 cases (90 per cent).⁵ One hundred per cent root coverage is not attainable in Class III recessions, but partial coverage is anticipated. The level of coverage can be estimated prior to surgery. This is done by drawing a line on the root at the level of the marginal gingiva, on the mid-facial of each tooth, on either side of the recession.

The disadvantages of the free gingival graft are that it often results in a slow healing wound at the donor site, as well as in a less than ideal match of tissues from the perspective of color. This occurs because the graft has typically the pale pink color of the palatal/oral gingiva donor tissue. Also,

because of its thickness, it is sometimes necessary to recontour the graft to obtain a good esthetic result.

For deep-wide recessions, the use of the pedicle flap, coronally or laterally positioned, may provide a predictable outcome. The main blood supply of the flap is not interrupted in this procedure. Therefore, the pedicle flap technique is specifically suited for the reconstruction or repair of areas with a poor vascular bed.⁶ However, a prerequisite for the procedure is the availability of a source of "attached" oral gingiva of sufficient dimensions situated adjacent to the recession. This keratinized tissue is often lacking or is too fragile to cover a root deformity.

The coronally-positioned flap, as described by Bernimoulin et al,⁷ combines a free gingival autogenous graft with a coronally positioned flap. Although it increases the use of the pedicle graft procedure in periodontal treatment, this technique has the disadvantage of requiring two separate operations. After the free autogenous gingival graft has healed, the pedicle flap



Fig. 6: The epithelium placed back in its original position to cover the wound on the palate.

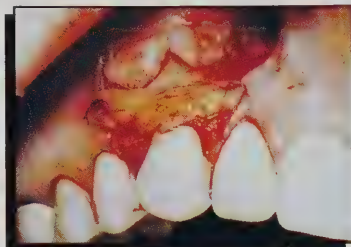


Fig. 7: The connective tissue graft is sutured in position over the denuded root surface.

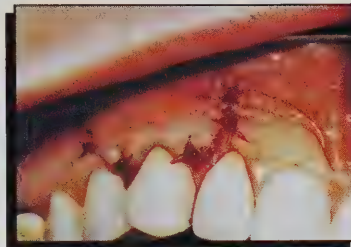


Fig. 8: The pedicle flap, which is sutured in coronal position, covers completely the connective tissue graft.



Fig. 9: Photograph showing the healing one week after the procedure was completed. The surgical gut sutures are still in place.



Fig. 10: The postoperative healing of the subepithelial connective tissue graft after three weeks is shown in this photograph.

— with a newly-established zone of oral gingiva — is placed coronally over the denuded root area. This procedure is indicated when “attached” oral gingiva, the donor tissue for a pedicle graft, is lacking.

The subepithelial connective tissue graft was first presented by Langer and Langer in 1985.⁸ In this technique, a pedicle graft is combined with a connective tissue graft in a bilaminar reconstructive procedure to effect coverage of denuded root surfaces.⁹ The procedure is indicated when there is a progressive recession or a recession that requires soft tissue coverage for esthetic or thermal sensitivity reasons. When a recession is found in combination with a root abrasion, the subepithelial connective tissue graft can be used to restore the defect.

The subepithelial connective tissue graft fulfils the treatment aims for root coverage, as outlined earlier. By combining the advantages of the pedicle flap technique with a free connective tissue graft to cover an avascular root surface, the subepithelial connective tissue graft is the treatment of choice for

wide or deep-wide recessions. The connective tissue provides thickness to the coronally placed oral gingiva, and the tissue color is better matched than is possible with a free autogenous gingival graft.

The use of the subepithelial connective graft is dictated by the extent of bone and soft tissue loss in the interdental areas. This refers to Miller’s Class III and IV defects, when partial or no root coverage can be expected.

Surgical Therapy

Preparation Of the Recipient Site

The denuded root surface (**Fig. 1**) is treated with scaling and root planing to remove dental plaque and calculus. Previously-placed restorations may prevent graft reattachment. These restorations must be completely or partially removed, even if this leaves the root surface with a slight indentation. In addition to mechanical planing and debridement of the root, the surface is conditioned with citric acid (pH 1.0).^{5,10} Using a cotton pellet, the acid is burnished into the root surface for five minutes

and then washed away with sterile saline.

A partial thickness flap is raised by making an intrasulcular incision at the apical margin of the defect, a scalloped horizontal incision in the interdental areas, and two vertical releasing incisions.¹¹ The scalloped incision reflects the marginal outline of the interproximal papilla and does not include the adjacent papillae. As shown in **Fig. 2**, the horizontal scalloped incision ends at the line angle of the tooth next to the defect. The recipient site should provide a firm graft bed for the connective tissue graft, with the graft ultimately resting on a bed that extends laterally at least 3.0 mm at the cemento-enamel junction or at the level of anticipated coverage of the defect, and 5.0 mm apically. The lateral and apical extensions of the graft bed will contribute to the collateral blood circulation for the graft. The vertical releasing incisions are made at the teeth neighboring the recession, and extend well into the oral mucosa (**Fig. 2**). This allows free movement and coronal advancement of the pedicle flap. The epithelium of the interdental papil-



Fig. 11: Preoperative photograph of gingival recessions around restored buccal root surfaces of tooth number 12 and 13.

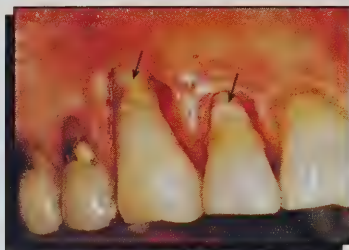


Fig. 12: The restorations are partially removed, leaving the root defects clearly visible (arrows).

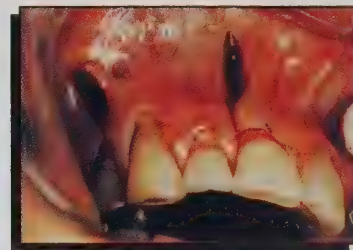


Fig. 13: Photograph showing the extended vertical releasing incisions of the pedicle flap. A free advancement of the flap is essential for proper positioning over the defect.

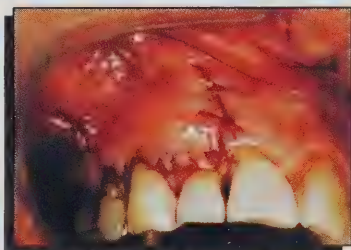


Fig. 14: Subepithelial connective tissue graft and pedicle flap sutured in coronal position.



Fig. 15: Postoperative photograph showing the healing and root coverage after three weeks. Notice the dark staining from the use of chlorhexidine in the cervical areas of the teeth.

lae is then removed with sharp dissection, using a small scalpel and a gingivectomy procedure (**Fig 3**). Exposure of the interdental connective tissue will allow the scalloped margin of the partial thickness pedicle flap to be sutured coronally.

Securing the Connective Tissue Graft From the Donor Site

The palate serves as the donor site for connective tissue. Two slightly convergent incisions are made in a mesiodistal direction, 2.0 to 3.0 mm apart (**Fig. 4**). The length of the incisions is determined by the extent of the recipient graft bed, as outlined previously. These incisions are apically extended and also slightly convergent, so that a wedge of tissue of the desired thickness and height can be removed in the bicuspid area.¹² The use of a vertical releasing incision is optional.

After the tissue is dissected and is free from the palate, the 2.0 mm wide band of surface epithelium is removed from the connective tissue (**Fig. 5**). The donor site wound on the palate is then closed by placing the strip of epithelium

back in its original position and securing it with one or two horizontal mattress sutures and/or cyanoacrylate tissue adhesive (**Fig. 6**).

Repositioning Of the Pedicle Graft

The connective tissue is stabilized over the denuded root surface with 5-0 surgical catgut sutures. This is done by suturing the tissue to the periosteum or the mesial and distal "attached" portion of the oral gingiva. The tissue is stretched slightly to obtain close adaptation to the recipient bed (**Fig. 7**).

Next, the pedicle flap is coronally positioned without tension. The fixation of the flap is accomplished by placing interrupted 5-0 surgical gut sutures in the interdental papillae and along the vertical releasing incisions. It is important that the connective tissue graft and the defect are completely covered with the pedicle flap (**Fig. 8**). The pedicle graft is not covered with a dressing postoperatively, and the patient is provided with detailed instructions for postoperative care. The use of dental floss in the surgical area is discouraged, and emphasis is placed on rinsing and cleaning the

area with a cotton applicator and chlorhexidine (0.12 per cent) twice daily for three weeks.

In-office postoperative care involves the supragingival polishing of the teeth with toothpaste once every two weeks for six weeks (**Figs. 9 and 10**).

This technique, as described above, allows a single root or multiple recessions in the same sextant to be treated in one session (**Figs. 11-15**).

Discussion

Caton and Greenstein,¹³ in a review of the factors related to periodontal regeneration, include these variables:

- root surface alterations
- progenitor cell populations
- epithelial exclusion from wound
- reduced periodontium
- wound stabilization

They recognized that reduced periodontium, in the form of a gingival recession, presents great technical problems for regenerative therapy.

The technique presented in this paper pays specific attention to the preparation of the root surface by mechanical and chemical means. Dental plaque and calculus are removed by scaling and root planing, supplemented by the use of citric acid or tetracycline to condition the root. Both acid solutions remove the smear layer that is left after root planing, and expose the dentinal tubules. The objective, here, is to gain connective tissue attachment.¹⁴ Lowenguth and Blieden conclude that current information strongly indicates a role for root surface demineralization to enhance periodontal wound healing.¹⁵

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Based on animal studies, Polson and Proye¹⁶ concluded that a fibrin clot attaches to the root surface very early in the healing process, i.e. at one to three days, and that collagen fibre attachment to the root surface is preceded by fibrin linkage. Disruption of the fibrin clot/root surface interface may lead to a marginal recession, and healing may be marked by a long junctional epithelium.^{17,18} For this reason, the stability of the flap/wound margin is important.

The subepithelial connective tissue graft, used for the coverage of denuded root surfaces, is an advancement in cosmetic periodontal surgical therapy. Since the technique was first described by Langer and Langer,⁸ several modifications have been suggested. These pertain specifically to the methods used to secure the connective tissue graft and suture the pedicle flap.^{12,19} Originally, the pedicle flap technique involved the use of a butt joint, located between the flap and the oral gingiva in the interdental areas, and a partial exposure of the connective tissue over the receded area. This exposed connective tissue will re-epithelialize, but there is a risk that the margin will recede as wound healing progresses.

As described in this paper, in the revised procedure the partial thickness pedicle flap is coronally sutured in the interdental areas, at the anticipated level of coverage of the root surface, to a connective tissue base. The connective tissue is exposed after a small gingivectomy. Since the pedicle flap covers the connective tissue graft completely, there is no secondary epithelization of exposed connective tissue and less chance for recession during healing. Tension on the flap may lead to flap displacement during the healing process, and can interfere with wound healing. Therefore, it is important that a partial thickness flap is prepared with releasing incisions that allow coronal advancement or lateral repositioning of the flap without any tension.

Careful suturing of the subepithelial connective tissue graft and the pedicle flap will contribute to wound stabilization and healing.¹⁷

The uninterrupted blood supply of the pedicle flap and the collateral circulation from the vascular bed of the recipient site contribute to the survival of flap and connective tissue over the avascular root surface. The connective tissue may even act as a scaffold or barrier to protect the fibrin clot/root surface interface from flap movement in the early phase of wound healing, and thus contribute to the root surface-connective tissue repair.

The limiting factor for the use of this procedure is the presence of a thin palatal oral gingiva at the donor site that will not allow a connective tissue graft of sufficient length and height to be dissected.

With this technique, the wound at the palate donor site is very small in comparison with the wound of a free gingival auto graft. Healing is quick, and there is very little discomfort for the patient.

The influence of the connective tissue graft on the pedicle flap, when "attached" oral gingiva is lacking, is not clear. The impression obtained here and from observations made by Miller¹⁹ indicate an increase in the zone of (keratinized) oral gingiva. The specificity of the underlying connective tissue may have an influence,^{20,21} however, this aspect needs further study. ■

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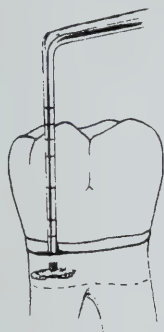
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Root Coverage Using A Lateral Pedicle Gingival Flap — A 22 Year Case Study

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ABSTRACT

The purpose of this report is to present the clinical management and surgical techniques used to successfully treat an area of severe gingival recession and root exposure with a lateral pedicle gingival flap, resulting in clinically-stable root coverage over a period of 22 years.

SOMMAIRE

Dans cet article, on présente la gestion clinique et les techniques chirurgicales auxquelles on a eu recours pour traiter avec succès, à l'aide d'un lambeau gingival pédiculé latéral, un cas grave de retrait gingival et de dénudation des racines. Les racines recouvertes sont restées cliniquement stables durant 22 ans.

quate gingivae or alveolar mucosa, with or without frenal involvement.

Depending on the configuration of the gingival defect, which can vary from wide and shallow to narrow but deep, surgical techniques attempt, most often successfully, to cover the exposed root.¹⁻³

This paper describes what may be the preferred treatment of a relatively severe example of a narrow and deep area of root exposure and gingival recession. Treatment involved using a lateral pedicle flap from a favorable donor site, and has resulted in clinically-stable root coverage for over 22 years.

Surgical Techniques

Fig. 1 shows the original area of recession on tooth 3.1. Especially in the mandibular anterior, the long and narrow configuration of the recession defect is usually considered the type of defect most likely to be covered with a lateral pedicle flap, provided there is a healthy adjacent donor site (D) with certain characteristics. These are:

- 1 Adequate thickness and width of donor gingival tissue;
- 2 Bone over the donor site, which should be of sufficient thickness to minimize the chances of exposing a fenestration or dehiscence (i.e. the situation should not be made worse by having root coverage in the recipient site while creating a similar or



Fig. 1: Pre-treatment view of root exposure and gingival recession on tooth 3.1.

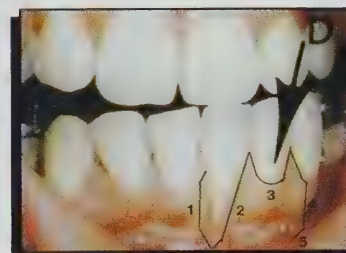


Fig. 2: Operative sequence of incisions to prepare the split-thickness flap.

worse defect at the donor site); and

- 3 Meticulous plaque control (as in this case).

Fig. 2 illustrates diagrammatically the sequence of incisions necessary at the recipient (R) and donor (D) sites to prepare the lateral pedicle flap. Grupe and Warren's initial incision guidelines are largely followed.¹ There are a number of clinically significant points:

- 1 The donor site should provide a width of pedicle flap at least 1.5

Introduction

Gingival recession with resultant root exposure is a relatively common clinical problem. Often asymptomatic and having various etiologies, in many cases this condition ultimately requires treatment to prevent food impaction, sensitivity, or continued trauma in what is usually an area of functionally-inade-

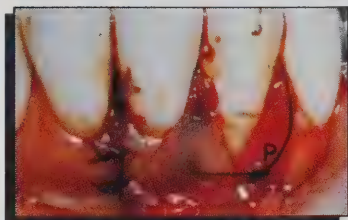


Fig. 3: Immediate operative view of transposed pedicle flap with sutures at recipient and donor sites.



Fig. 4: Post-operative appearance of recipient and donor sites at one week and one year.



Fig. 5: Appearance of recipient and donor sites after 15 years.

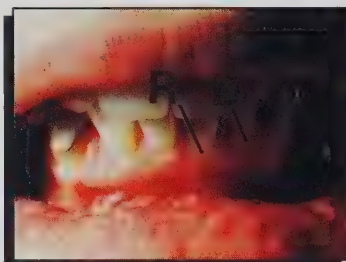


Fig. 6: Clinical appearance of the operative site after 22 years.

times the width of the recipient site;

- 2 The flap should be split thickness, leaving periosteum covering the donor site;
- 3 The donor flap, when transposed laterally to the recipient site, should remain in position, with no tendency to pull back to the recipient site. If the flap is under tension, a 45-degree cut back (incision 5) toward the recipient site at the apical point of incision 4 can be made. This allows a lengthening of the flap, permitting it to remain in position at the recipient site and in quiet repose;
- 4 The soft tissue freed at the recipient site is discarded;
- 5 Bone in some amount must be present beneath the tissue discard at the distal lateral margin of the recipient site. The flap is rotated (incision 1 area) toward the recipient site, and must remain in contact with the bone when sutured. The possibility that multi-functional cells derived from this bone margin may contribute to wound healing and gingivae-root attachment should be considered.

Fig. 3 illustrates the suturing of the lateral pedicle flap. In this case

5-0 ethiflex sutures, placed with a half-round needle, were used. Two single sutures were judged sufficient to hold the flap over the lateral bone margin, since a 45-degree cut back of the flap was made previously to avoid tension. A single interrupted suture was placed through the flap and periosteum (P) at the donor site. Additionally, a sling or suspensory suture was placed through the flap and tied on the lingual of tooth 3.1 to hold the flap snugly to the labial root surface of this tooth, thereby preventing apical slippage of the flap.

The root surface was debrided with curettes to a smooth but not glossy and hopefully toxin free surface, but was not otherwise altered. Following treatment the entire surgical site was covered with Burlew's foil and Coe-Pak.

Post-operative instructions included an antibiotic: Penicillin V in 250 mg tablets. One tablet q6h for seven days was prescribed. In addition, 0.5-1.0 g of vitamin C per day for one month was advised to assist in collagenesis.

A composite view of the recipient and donor site at one week and one year is shown in **Fig. 4**. The healthy and well-nourished soft tissue at both recipient and donor sites at one week indicated a sig-

nificant first step toward a successful result. The situation at one year tended to confirm this optimism.

Fig. 5 shows the recipient (R) and donor (D) sites at 15 years post-surgery. The gingival sulcus cannot be probed at either site. Plaque control throughout this time has been meticulous. **Fig. 6** shows a stable surgical result at 22 years.

Discussion

This report confirms the long-term successful application of the lateral pedicle flap for root coverage in an area of gingival recession and root exposure. The technique used in this case was described briefly, and certain details considered critical to its ultimate success were highlighted. Paying close attention to the principles of surgical procedures, combined with an understanding of oral biology, including an appreciation of cellular origins and their dynamics in soft tissue attachment to root, would appear to have an important bearing in achieving clinical success. Gentle application of this surgical technique cannot be overstated. If all of these points are taken into consideration, consistent and stable surgical results should be expected. ■

Dr. Stakiw is a part-time clinical instructor in periodontology in the faculty of dentistry, University of Western Ontario. He also maintains a private periodontics practice in London, Ontario.

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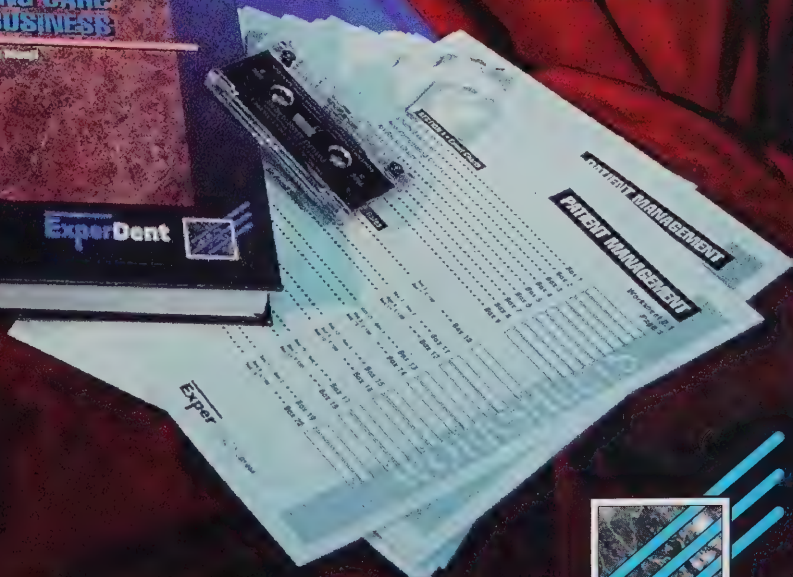
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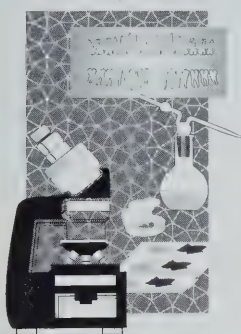
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The Reliability of the Periotron 6000 in the Presence of Plaque

Philippe Martin, DMD

Paul D'Aoust, B.Sc., DMD

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ABSTRACT

The aim of this study was to evaluate if the presence of supragingival plaque can influence measurements of gingival crevicular fluid flow (CFF) taken with the Periotron 6000 unit.

Sixty-seven experimental sites and 67 contralateral control sites were randomly chosen. Crevicular fluid was collected on a filter paper strip for 15 seconds and the CFF was measured using the Periotron 6000 unit: CFF₁. The supragingival plaque was removed from the experimental site with a Gracey curette and the plaque index (PI) was estimated. Five minutes later, a second CFF measurement was taken: CFF₂. On the control tooth, the plaque was not removed, and the PI was established after the second CFF measurement.

There was no significant difference between the CFF₁ and the CFF₂ values for the control teeth. In the experimental teeth, a PI of 3.0 increased the CFF₁ (pre-plaque removal) compared to the CFF₂ (post-plaque removal) value by 20.6 Periotron units (PU) ($p = 0.0004$). A PI of 2.0 caused a 7.3 PU increase ($p = 0.0370$). There were no significant changes for a PI of 1.0 or 0. In this type of experimental protocol, the results also indicated that CFF differences were not affected by the gingival index (GI) for either the

experimental or control groups. These results indicate that large amounts of supragingival plaque can significantly elevate CFF measurements, as determined by the Periotron 6000 unit.

Key words: Crevicular fluid, dental plaque, periodontal diseases.

SOMMAIRE

Le but de cette étude est d'évaluer si la présence de la plaque dentaire influence les mesures du débit du liquide crévulaire (CFF) prisent avec le Periotron 6000. Soixante-sept sites expérimentaux et 67 sites contrôles contralatéraux sont choisis au hasard. Le liquide crévulaire est recueilli sur une bande de papier filtre pendant 15 secondes et quantifié au moyen du Periotron 6000 : CFF₁. La plaque supragingivale est enlevée au site expérimental avec une curette Gracey, l'indice de plaque (PI) étant prise au même moment. Cinq minutes plus tard, une deuxième quantité de CFF est évaluée : CFF₂. Sur les dents contrôles, le PI est évalué et la plaque enlevée une fois CFF₂ mesuré. Il n'y a pas de différence significative entre les valeurs CFF₁ et CFF₂ aux sites contrôles. Sur les dents expérimentales, PI = 3.0 a une valeur CFF₁ (plaque présente) supérieure à CFF₂ (plaque enlevée) de 20,6

unité périotron (PU) ($p = 0.0004$) et PI = 2.0 démontre une augmentation de 7,3 PU ($p = 0.0370$). Il n'y a pas de variation significative pour PI = 1.0 et PI = 0. Suivant ce protocole expérimental, l'indice gingival n'influence significativement pas la différence entre CFF₁ et CFF₂. Ces résultats indiquent que de grande quantité de plaque supragingivale peut augmenter significativement les mesures du CFF déterminées par le Periotron 6000.

Introduction

Since Egelberg¹ demonstrated a positive correlation between gingival inflammation and gingival crevicular fluid flow (CFF), it is now generally accepted that the measurement of CFF is a good clinical aid in assessing gingival health.²⁻¹⁰

Moreover, while many indices require a subjective evaluation of soft tissue appearance, the quantitative measurement of CFF is an objective way of monitoring the degree of gingival inflammation both for clinical research and for the dental office.¹⁰ This tool can be used to detect inflammation even before clinical changes occur,^{4,11} to determine the severity and evolution of the inflammatory process, and to assess the effectiveness of a periodontal therapy.⁹

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Many methods are available for collecting and measuring CFF,^{12,13} but one of the most popular techniques, especially as it can be conveniently used in the dental office, involves the Periotron 6000 unit.^{14,15}

The most important premise in measuring CFF is to ensure that the fluid collected is not contaminated by other liquids. This requires the tooth to be rigorously isolated and dried before the measurements are made. However, since plaque is composed of approximately 80 per cent water,^{16,17} some fluid from the supragingival plaque could contaminate the crevicular fluid absorbed by the filter paper strip. The manufacturer therefore recommends removing supragingival plaque before making CFF measurements. However, the influence of supragingival plaque has not been well established.

The aim of this study was to evaluate the influence of supragingival plaque on the quantitative assessments of crevicular fluid flow obtained by the Periotron 6000 unit. By improving the study design carried out by Stoller et al,¹⁸ it was anticipated that some of the concerns and questions raised in this previous study could be answered.

Materials and Methods

Experimental teeth were chosen on the maxillary arch from premolars to premolars to facilitate the protection of teeth from saliva contamination. For each experimental permanent tooth selected, the contralateral tooth was used as a control. All experimental teeth were randomly selected. These teeth were free of fillings and traumatic occlusion, had ideal location on the arch, with no loss of attachment, and had probing depths of less than 3.0 mm.

There were 67 experimental sites and 67 contralateral control sites. For each of the 48 patients, one or more pairs of experimental/control teeth were selected. All subjects were healthy and from 10 to 52 years of age. They were not taking any medication, except for certain women who used oral contraceptives, and they all signed free

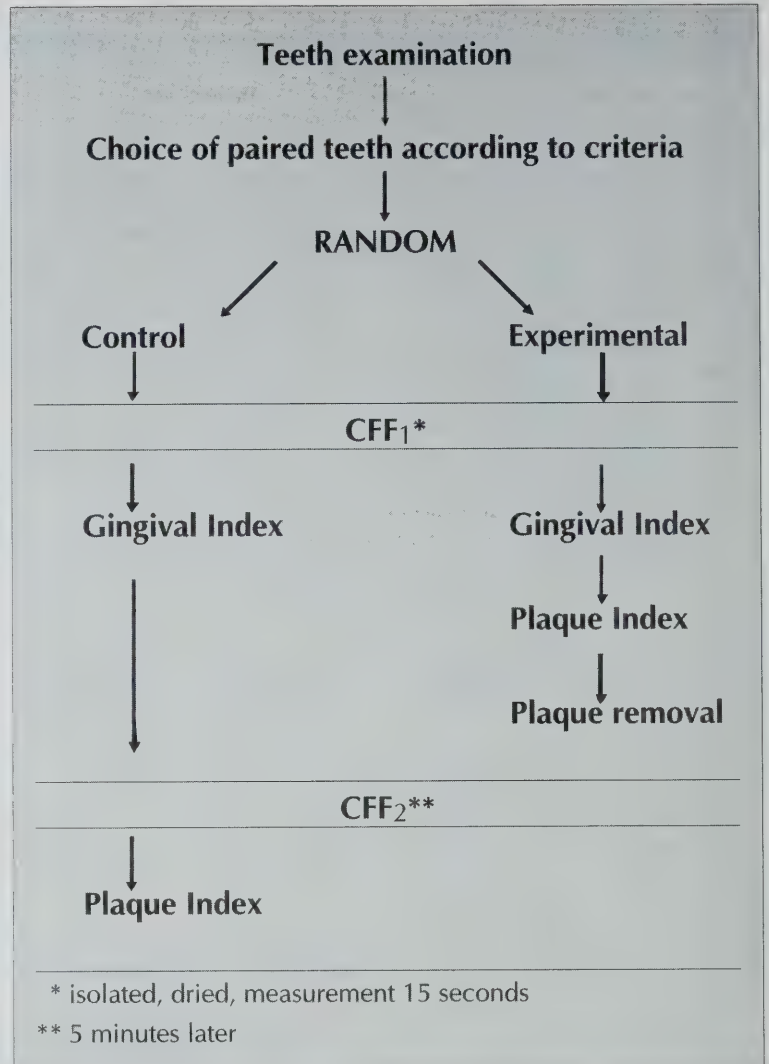


Fig. 1: Study design.

and informed consent forms before being included in the study.

The experimental sites were isolated with 2 X 2 gauze pads on the palatal side and with cotton rolls on the vestibular side. Selected teeth were pat dried using 2 X 2 gauze pads. A Periotron filter paper strip (ProFlow, Amityville, New York) was then inserted at the bottom of the pocket on the mesio buccal surface of the teeth for 15 seconds. The paper strip was then inserted between the jaws of a previously calibrated Periotron 6000 unit. This measurement represents crevicular fluid flow at time 1: CFF₁.

The gingival index (GI)¹⁹ was recorded, followed by the plaque index (PI).²⁰ At this time the plaque was gently removed with a Gracey

curvette, both on the experimental site and the interproximal adjacent site. Five minutes later, a second Periotron 6000 CFF measurement was taken as previously described: CFF₂. The same procedure was used on the control tooth, except that the second measurement was made without plaque removal. The PI was only established after the second Periotron measurement to ensure that the probe had no affect on the quantity of supragingival plaque recorded. Experimental procedures are illustrated in Fig. 1. Data were rejected if the CFF₁ or CFF₂ samples were contaminated by gingival bleeding.

Analyses of variance were determined for statistical assessments. The Periotron 6000 unit used in this

Table I
Mean CFF Measurements for Control Teeth

PI	n	CFF ₁ PU / 15 sec (se)	CFF ₂ PU / 15 sec (se)	ΔCFF PU / 15 sec (se)	p-value
0	31	30.4 (2.8)	29.1 (2.8)	1.4 (2.4)	0.5716
1	20	37.9 (5.5)	36.2 (7.0)	1.7 (3.0)	0.5686
2	10	36.4 (5.4)	35.4 (5.7)	1.0 (4.2)	0.8123
3	6	59.3 (8.6)	56.5 (7.2)	2.8 (5.4)	0.6026

PI: Plaque Index
 CFF₁: First crevicular fluid flow measurement
 CFF₂: Second crevicular fluid flow measurement
 ΔCFF: CFF₁ - CFF₂
 PU: Periotron unit
 se: Standard error

Table II
Mean CFF Measurements for Experimental Teeth

PI	n	CFF ₁ PU / 15 sec (se)	CFF ₂ PU / 15 sec (se)	ΔCFF PU / 15 sec (se)	p-value
0	23	22.8 (1.9)	23.5 (1.8)	-0.7 (3.0)	0.8075
1	19	32.8 (3.3)	28.2 (4.1)	4.7 (3.3)	0.1636
2	18	37.4 (3.0)	30.1 (4.2)	7.3 (3.4)	0.0370*
3	7	51.9 (6.8)	31.3 (6.3)	20.6 (5.5)	0.004*

PI: Plaque Index
 CFF₁: First crevicular fluid flow measurement
 CFF₂: Second crevicular fluid flow measurement
 ΔCFF: CFF₁ - CFF₂
 PU: Periotron unit
 se: Standard error
 *: p < 0.05

study was previously tested to see if the calibration curve established a linear relationship between the fluid volume and the Periotron measurements. As this linear relationship did exist, the data were processed in Periotron units (PU). Two investigators, who were previously calibrated to follow identical protocols, made all the measurements.

Results

CFF data for the control sites and experimental sites are shown in **Table I** and **Table II**, respectively. An analysis of variance was performed to establish the effect of PI on the mean difference between CFF₁ and

CFF₂. A Shapiro-Wilk test accepted parametric tests for the statistical evaluation.

The ANOVA test was performed to verify if the CFF changes were significant. The test indicated that the quantity of plaque significantly affects the CFF measurements for experimental teeth ($F_{3,63} = 4.05$; $p = 0.0107$). A statistical test was performed to determine if the effect of each PI was individually significant.

The effect of plaque estimated by the difference between CFF₁ and CFF₂ results was not significant for a PI of 0 or 1.0. However, a PI of 2.0 significantly increased the quantified CFF₁ ($p = 0.0370$), and there was also a significant increase for a PI of 3.0 ($p = 0.0004$).

An ANOVA was also performed to demonstrate the influence of the GI on CFF measurements. Following this type of protocol, the severity of gingival inflammation determined by the GI did not significantly change CFF₂ measurements compared to CFF₁ measurements.

Discussion

The Periotron 6000 unit is a sensitive instrument. Its quantification of CFF can assess visually imperceptible gingival inflammation, although extrinsic determinants may influence the readings: i.e. evaporation, temperature, relative humidity, strip placement, circadian pattern and salivary contamination.¹² Studies were carried out to

determine the influence of these factors and eventually control them.

Our results showed that large amounts of supragingival plaque increased CFF measurements. There was a significant mean increase ($p < 0.05$) of 20.6 PU for a PI of 3.0, and of 7.3 PU for a PI of 2.0. These increases were confirmed as real since the removal of supragingival plaque resulted in lower CFF values. There was no significant relationship between the GI and the change in CFF. Experimental variations due to replication of measurements or insufficient lapse of time were not significant, nor were CFF changes for control teeth.

As plaque is 80 per cent water,^{16,17} fluid contamination from this source is one of the extrinsic factors that must be controlled by properly isolating the site before sampling. A part of the plaque (fluid, bacterial cells and intercellular material) may, in fact, also be withdrawn with the paper strip. Any fluid absorbed by this paper strip will influence measurements taken with the Periotron 6000 unit.²¹

Stoller et al,¹⁸ in a previous study, reported greater CFF changes for PIs of 3.0 and 2.0. Contrary to our results, they reported significantly higher pre-plaque removal measurements at their PI = 1.0 site. The difference between the two studies may be the result of fewer samples in their study. Experimental procedures seemed to be the same, except that they dried the teeth with an air syringe while we pat dried the teeth with 2 X 2 gauze pads. The air jet may have stimulated production of crevicular fluid, or it may have pushed water droplets into the interproximal crevice where the measurements were taken, which may also account for the difference.

We did not analyze the global mean difference between CFF₁ and CFF₂, as Stoller and his colleagues¹⁸ did, because we believed that the number of samples for each PI group could have changed these data. A comparison with a PI of 0 could not be made because Stoller et al did not study this index. As expected, we did not observe significant changes for PI = 0.

From the results obtained in the present study, the presence of large amounts of plaque can significantly influence CFF readings taken with the Periotron 6000 unit. The instructions by the Periotron 6000 manufacturer to gently remove supragingival plaque before CFF measurements were shown to be justified. ■

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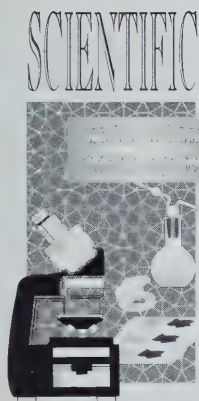
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The Role Of Malocclusion And Orthodontics In Temporomandibular Disorders

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ABSTRACT

The recent literature is reviewed to assess the role of the dental occlusion in the etiopathogenesis of temporomandibular disorders (TMD) and the role of orthodontic therapy in preventing and treating TMD. Little evidence was found to support occlusal factors in TMD other than lack of posterior occlusal support and anterior open bite, which may represent predisposing factors in TMD. Orthodontic therapy may not affect the risk of developing TMD and has little role in treatment.

SOMMAIRE

Dans cet article, on passe en revue les dernières publications pour déterminer le rôle que joue l'occlusion dentaire dans la pathogenèse des désordres de l'articulation temporo-mandibulaire (ATM) ainsi que le rôle de l'orthodontie pour prévenir ces désordres. Sauf le manque d'appui occlusal postérieur et la béance antérieure qui peuvent favoriser de tels désordres, on a trouvé peu d'indices attestant que les facteurs occlusaux joueraient un rôle à cet égard. Quant aux soins orthodontiques, il se peut qu'ils ne changent en rien les risques associés à ces désordres et leur rôle pour les traiter reste minime.

Introduction

The temporomandibular joint (TMJ) has been a major focus in the field of orthodontics over the last decade. Orthodontics has been described by most authors as a viable method of treating temporomandibular disorders (TMD), but some have suggested that orthodontic treatment may actually cause TMD. A literature review was conducted by the authors to address two principle questions: Does correction of a malocclusion decrease the incidence of TMD? Does traditional orthodontic mechanotherapy cause TMD?

TMD may occur when intraoral forces exceed the tissue tolerance of the masticatory system's components.¹ The potential sites of tissue breakdown are the muscles, the supporting structures of the dentition, the joint, and the teeth themselves. It is generally accepted that stress is an important factor in producing pain related to TMD.^{1,2} Physiologic tolerance relates to the individual's ability to tolerate or adapt to variations from the ideal. This tolerance level is variable in the same way that the body's resistance to disease is variable.

The causation of TMD is generally viewed as being multifactorial.¹⁻⁵ Since there are many etiologic variables, it follows that

malocclusion alone cannot be used to predict whether or not a person will develop TMD. The condition often presents with fluctuating symptoms, spontaneous remissions, and multiple confounding factors.^{4,5} It is therefore possible for clinicians to erroneously conclude that a particular treatment caused or improved the symptoms associated with TMD. This procedure may subsequently be described in the literature as a case report, reinforcing the perceived importance of the treatment in question. Cross-sectional, longitudinal studies and controlled studies must be initiated and evaluated to provide the necessary data.

Studies Assessing the Role Of the Dental Occlusion In TMD

Riolo and others,⁶ in a cross-sectional survey of 1,342 subjects aged six to 19 years, concluded that there was an increased frequency of joint noises and tenderness of masticatory muscles in patients who had cusp-to-cusp Class II malocclusions, overjet greater than 6.0 mm or a negative overjet, as well as in patients with an anterior open bite.

In another study, 100 consecutive patients with Class II skeletal malocclusion were assessed.⁷ The

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authors reported that the degree of joint degeneration paralleled the severity of retrognathia in most cases, and recommended imaging of the TMJ prior to orthognathic correction of retrognathic deformities. However, this study could not assess the relative importance of a Class II malocclusion in TMD as no comparison groups were studied.

In a study by Seligman and Pullinger, selected occlusal variables were assessed in 196 patients with TMD and in 222 non-patient controls.⁸ Class II malocclusion was more common in males, with joint clicking, and RCP-ICP asymmetric slides more prevalent in women. While selected occlusal variables demonstrated a trend in certain groups, there were no universal findings for men and women, and the associations were not strong. Sadowsky and Polson⁹ found a high prevalence of non-functional contacts and mandibular shifts both in patients with TMD and in those without TMD. It was concluded that there was no relationship between the presence of balancing contacts and mandibular shifts in patients who had signs and symptoms of TMD.

Controlled studies did not demonstrate an association between occlusal interferences, occlusal guidance relationships, dental attrition, and TMD.¹⁰ The only association detected was asymmetrical occlusal slide (CR-CO) and intra-capsular arthrosis.

The occlusal features of 413 patients with TMD and 147 asymptomatic controls were assessed by Pullinger and co-workers.¹¹ No correlation was seen between TMD and centric relation-occlusion discrepancies or slides (unless more than 2.0 mm) overbite, overjet, midline discrepancies, and occlusal classification. Increased risk was noted in patients with anterior open bite and with more than four missing posterior teeth. However, the variation in symptoms could not be explained based on occlusal factors. It was concluded that occlusal factors cannot be considered the unique or dominant factors in determining TMD, and that anterior open bite may be a result of osteoarthritis (OA) rather than causative.¹¹

A review of the literature assessing intercuspal occlusal relationships and TMD was conducted by Seligman and Pullinger.¹² No relationships were seen between TMD and anterior open bite, overbite, overjet, symmetry of contact in retruded contact position, crossbite and posterior occlusal support.¹² However, unilateral retruded contact position (RCP) may encourage disk displacement, and lack of molar support may be associated with OA.

Pullinger and Seligman assessed occlusal variables in TMD and control patients.¹³ It was found that increased overjet was associated with OA¹³ and that anterior open bite was present in cases of OA but absent in other groups. It was, however, not clear if this was the cause or the result of OA. No occlusal relationships were identified in cases of myalgia or disk displacement.

Two hundred and sixty-nine non-patient nursing students with a joint disorder, a muscle disorder, or a joint/muscle disorder were classified as normal by Schiffman and co-workers, and examined for occlusal status and evidence of oral habit.¹⁴ A social readjustment scale was also completed. Mandibular dysfunction was correlated with parafunctional habits and stress was associated with muscle disorders. No correlation between occlusion and findings of TMD was seen. These findings suggest multifactorial causation and a lack of association between TMD and occlusal factors in a non-patient group.

Greene⁴ states that most cases of TMD have little or nothing to do with occlusion or maxillomandibular relationships. Seligman¹² and Pullinger, after reviewing the literature, concluded that cuspal occlusion had a limited role in TMD. They suggested that remodelling may occur slowly in most people without overwhelming the adaptive capacity of the joints.

In Huber and Hall's study of 217 men and 217 women, no significant differences were seen between signs of TMD and centric relation - occlusal shifts, lateral slide from CR to CO, non-working

contacts and disclusive contacts distal to the canines.¹⁵ Occlusal factors did not explain the difference in prevalence of TMD in females.¹⁵

Rather than causing TMD, it has been suggested by Minagi and co-workers that balancing side contacts may protect the TM joint. The absence of balancing side occlusal contacts was shown to correlate with increasing prevalence of TM joint sounds.¹⁶

Clark¹⁷ has stated that the structural occlusal model of TMD is not based on valid research, does not recognize biologic diversity, and ignores both considerable experimental evidence and the belief that TMD represents a multifactorial condition. As occlusal factors alone cannot explain TMD, this misconception of etiology does not allow prevention of the disorder.

Seligman and Pullinger's review of controlled studies failed to identify any occlusal factors, including balancing and working contacts, length and symmetry of RCP, occlusal guidance patterns and parafunction related to TMD signs or symptoms.¹⁰ Naturally occurring occlusal variations were not associated with parafunction.¹⁰

Mitchell,¹⁸ in a review of the etiology of TMD, indicates that TMD should be assessed in terms of all musculoskeletal disorders and that excess functional loading and parafunction may play a role in etiology. Lipp¹⁹ reviewed the literature to assess the relationship between TMD and occlusion. He concluded that experimental, epidemiologic and clinical studies failed to support a significant role of occlusion, and that the remodeling capacity of the joint allows accommodation to most occlusal function. Controlled studies of occlusal factors and TMD show either no relationship or, occasionally, a weak correlation of specific variables with TMD.

Studies Assessing the Role Of Orthodontic Therapy In TMD

The most frequent sign of TMD is joint sounds, which are often present in the absence of other



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symptoms.²⁰ TMJ sounds are common and occur in 20 to 30 per cent of the population, including patients before and after orthodontic treatment. Sadowsky and others²¹ reported an increased incidence of signs and symptoms of TMD with increasing age. Reynders⁵ stated that the prevalence of TMD symptoms increased from 30 to 60 per cent between the ages of seven and 15 years, which is a common time for patients to receive orthodontic treatment.

Intermittent symptoms of TMD were identified in approximately two-thirds of 167 adolescents examined by Heikinheimo and co-workers,²² and frequent symptoms were reported in up to 7.2 per cent of subjects. Approximately one-half of 12-year-old patients with clicking, ear symptoms, or bruxism no longer had symptoms at age 15.

In a follow-up study, the 167 children were examined to assess their occlusal status.²³ Signs of TMD were common, with more than 25 per cent demonstrating tenderness of the muscles of mastication, while clicking was evident in six per cent. Only two subjects were determined to have an optimal occlusion. No correlation was possible due to the multiplicity of occlusal findings. It was concluded that screening would be appropriate prior to orthodontic treatment.²³

The prevalence of TMD symptoms in a large epidemiologic study of 7,337 children by Moteji and co-workers was 12.2 per cent.²⁴ Joint sounds were the most common symptom (89.3 per cent) and pain was present in 2.2 per cent of cases. In children with TMD, 27.7 per cent had morphologically normal occlusion, 24.9 per cent had dental crowding, 20.1 per cent excessive overjet, 6.8 per cent deep bite, 6.3 per cent edge-to-edge bite, 5.6 per cent anterior crossbite, 5.4 per cent open bite and 3.8 per cent posterior crossbite.

Runge and co-workers evaluated 226 patients, prior to orthodontics, for the presence of joint sounds and occlusal and skeletal relationships. No significant associations were seen.²⁵ However, dental wear and increased overbite may have represented risk factors.

In another study, fewer patients demonstrated clicking after treatment than before orthodontics, and no progression of other symptoms of TMD were seen.²¹

In an epidemiologic study by Dworkin and co-workers, clinical signs and symptoms of TMD were assessed in patients presenting with complaints of TMD and in case controls.²⁶ No differences in occlusal classification or dental related variables were seen.²⁶ The literature indicates that symptoms of TMD are inconsistent during mixed dentition, and should not be given excessive attention unless symptoms are marked and progressive.

In this study, the majority of the 30 patients who were referred for orthognathic surgery were diagnosed with internal derangements.²⁶ Half of these patients, who were followed-up for more than 12 months after treatment, developed TMJ findings in previously deranged joints and 20 per cent developed pain. The authors suggest that new loading of a previously deranged TMJ may lead to increased symptoms and could lead to skeletal relapse.

Link and Nickerson assessed 51 orthodontic patients by history, clinical exam and magnetic resonant imaging (MRI).²⁷ Twelve per cent demonstrated anterior disk displacement on MRI, 10 per cent had clinical evidence of disk displacement, and 20 per cent had a history of pain or clicking. History and clinical examination identified half of the population with disk displacement as seen on MRI. However, further study is needed to assess the importance of imaging in predicting future dysfunction in asymptomatic patients.

Orthodontics has been accused of causing TMD as a result of mechanotherapy. In turn, this has been theorized to cause posterior displacement of the condyles in the mandibular fossa, which subsequently results in anterior disc displacement causing TMD. However, this contention is not supported in studies.

Kremenak and co-workers assessed 109 patients prior to orthodontics and followed them for a mean of two years.²⁹ Ninety per

cent of these patients had unchanged or improved TMD scores, while 10 per cent had worse scores — indicating that orthodontic treatment is not an etiologic factor in TMD.²⁹ In a similar study by Egermark and Thilander, 76 per cent of 402 children were re-evaluated 10 years after initial evaluation, and a lower prevalence of TMD was identified in those who had received orthodontics.³⁰

Four hundred and fifty-one patients without symptoms, who were undergoing orthodontic treatment, were followed-up for 18 months by Rendell and co-workers. No patient developed TMD.³¹ Of the 11 patients who began orthodontic treatment with signs and symptoms of TMD, no consistent changes in symptoms were seen.³¹

Kundinger and co-workers compared patients who had undergone orthodontic treatment, in combination with extractions, to matched controls who had not received orthodontics.³² No significant differences were seen on TMJ tomography, electromyography, and bite force.³² Similarly, Sadowsky and co-workers assessed joint sounds in 347 orthodontic patients before and after treatment.³³ No association between joint sounds and occlusal variables was seen. It was not clear if joint sounds increased following orthodontic treatment or if they increase with age.³³

In Schiffman and co-workers' study, 160 patients were evaluated before and after orthodontic therapy. Fewer patients had joint sounds following treatment, and no progression of symptoms was seen.¹⁴ Hirata et al³ studied the effect of orthodontic treatment on joint noises and mandibular movement. The experimental group consisted of 102 patients with Class I, II and III malocclusions. Forty-one patients matched for age and various malocclusions served as the control. There were no significant differences between the groups with respect to mandibular range of motion or joint sounds. It was concluded that orthodontic treatment neither increases nor decreases the incidence of signs of TMD.

The orthodontic procedures that have received the majority of criti-

cism with respect to TMD are premolar extractions and maxillary incisor retraction with the use of elastics and/or headgear.³⁴ It is hypothesized that distal pressure on the mandibular complex can put distal pressure on the condyles and conceptually cause an anterior displaced disc. Some functional orthodontists believe that premolar extractions and retraction of the anterior maxillary incisors will trap the mandible in a retruded position.³⁵ However, there are no controlled studies that support this opinion.

Hans and co-workers compared 29 patients who had undergone orthodontic therapy, with premolar extractions, to matched subjects who had not undergone orthodontics and had not received dental extractions.²⁸ Diagnostic testing included TMJ tomography and electromyography. No statistically significant differences were seen in treated or control subjects.

In a four- to five-year longitudinal study of occlusion and TMD, Egermark-Eriksson and co-workers reported on 238 patients. Those who received orthodontic treatment were compared with untreated subjects, and no differences in TMD were identified.³⁶ However, some occlusal factors appeared to be of potential importance, with cross-bite and anterior open-bite showing some association with TMD.

Two studies by Gianelly et al^{37,38} used corrected tomography to study condylar position. In one study, the experimental group was treated with extractions of maxillary first premolars and incisor retraction. The control group was matched for age, sex, and malocclusion with the experimental group. No significant difference in condylar position between either group was found. The condyles were not located in the posterior aspect of the fossa following treatment. In the second study, extraction versus non-extraction therapy was assessed.³⁸ There was no significant change in condylar position in either group before or after treatment. Headgear did not have a significant effect on condylar po-

sition in the 12 patients who used it.

In a study by Luecke and Johnston,³⁵ 42 patients with Class II, Div. I malocclusions were treated with maxillary premolar extraction therapy. Cephalometric superimpositions were used to measure the mandibular displacement at the chin and condyles during treatment, and to examine the extent to which this displacement is related to the correction of maxillary incisor protrusion. Findings showed greater mesial displacement of the mandible than distal displacement, which correlated with changes in the buccal occlusion and not with incisor retraction. Luecke and Johnston also found that the condyle remained in the mandibular fossa, and concluded that remodelling maintained the head of the condyle fixed in space regardless of the mandibular displacement.

In a study by Artun and co-workers, 29 patients with Class II, Div. I malocclusion were treated with maxillary first bicuspid extractions and maxillary tooth retraction using a fixed appliance therapy. These patients were then compared to 34 patients with Class I malocclusion, who were treated without dental extractions.³⁹ Patients were assessed clinically and radiographically. No differences were seen in centric relation/occlusion slide or in evidence of joint clicking. In patients with clicking, posterior condyle position was seen on tomography.³⁹

Dibbets and van der Weele⁴⁰ followed 172 patients in a longitudinal prospective study over 15 years. The subjects were treated with either removable appliances, which were mostly functional, or fixed appliances using Begg mechanics or chin-cups. After 10 or more years all groups had similar frequencies of TMD. It is important to note that the biomechanical principles of the treatment types were different, and therefore the cause of the TMD cannot be related to the specific treatment modalities. Although not statistically significant, there was a higher frequency of joint clicking in patients who fit the criteria for premolar

extraction therapy. This clicking occurred at a higher frequency before and after orthodontic treatment. From this, the authors suggested that the common denominator of the two is the growth pattern, which may have a relationship to TMD.

The effects of extractions and Class II elastics on the signs and symptoms of TMD were studied by O'Reilly et al.⁴¹ In this study, the experimental group consisted of 60 subjects — 48 with Class II, Div. I malocclusions and 12 with Class I malocclusions. Nearest-age siblings who were within 16 months of age of experimental group members, and with no previous orthodontic treatment, formed the control group. These individuals had 38 Class II and 22 Class I occlusions. TMD signs and symptoms were measured before, during, and after treatment in both groups, and no significant differences were seen in the frequency of TMD between them. O'Reilly et al concluded that orthodontic treatment involving extractions and Class II elastics has little or no effect on TMJ signs and symptoms. Sadowsky²⁰ concluded that orthodontics should not be seen to cause TMD because of the multiplicity of factors that may be responsible for producing or exacerbating TMD.²³

In general, orthodontic mechanotherapy produces gradual changes in an environment that is generally adaptive, and remodeling occurs during treatment.

Summary

The current literature indicates that occlusion plays a minimal role in TMD. Similarly, based on a review of recent literature, and the proposed mechanisms by which malocclusion may cause TMD, it appears that occlusion plays a minor role (at best) in TMD.

Correction of a malocclusion should not be considered as a treatment of TMD for the majority of patients. Joint noises are a common sign of TMD. However, joint noises without additional symptoms do not usually require treatment. Orthodontic treatment will seldom correct joint noises, which may

come and go during treatment or regardless of treatment.

The literature does not support the theory that maxillary incisor retraction will cause posteriorly positioned condyles. Studies of the prevalence of TMD in pre- and post-orthodontic populations and in cases of malocclusion generally show no difference in the prevalence of TMD.^{3,21,42} Dentists should be aware that the literature shows that orthodontic treatment neither causes TMD nor represents appropriate treatment. ■

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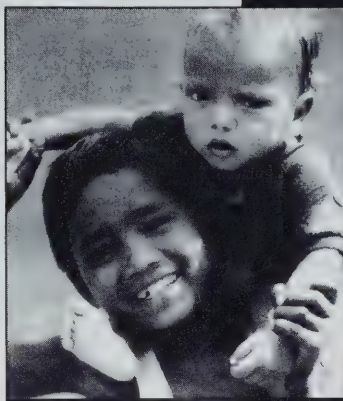
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LETTERS (cont. from page 860)

Third Party Plans

I recently received a copy of your article "Third-Party Payment Plans Endangered," which appeared in the June 1994 issue of the *Journal* (President's Column, Vol. 60, No. 6, p. 481).

I couldn't agree more with your description of events as they have transpired and your assessment of the implications of health care benefits being subject to taxation.

Our interests here in the U.S., of course, are similar to yours — that our population maintain the highest level of oral care possible. The intrusion of what I like to call the "Fourth Party" (government) will almost surely result in an overall lower level of oral health. Taxation of health care benefits will begin this erosion.

While there doesn't appear to be any avenue available to us to

counter this tragedy except to jump in the political fray — perhaps there are other courses we might take which would remove "managed care" as a vehicle of choice for the employer and make government less inclined to tax dental benefits. Such a course would entail the entire dental profession wholeheartedly endorsing and actively promoting the direct reimbursement (DR) form of employer-sponsored dental benefits.

From an employees' standpoint a direct reimbursement program, when compared to any "managed care" device, always offers distinct advantages. Studies of DR programs already in existence show that, because of their popularity with employees, very few are ever discontinued once they are initiated. Notwithstanding other positive factors, that alone would discourage government from tinkering with something so popular among voters.

From the employer's stand-

point, DR is a win-win situation. We are fond of telling employers that they have two options when comparing DR to their present program or to "managed care." They may keep their same level of benefits and reduce their costs, or they may maintain their same costs and increase the level of benefits. An honest and true comparison may very well enlist the support of employers against "fourth party" intrusion.

The American Association of Orthodontists has been actively promoting direct reimbursement for many years. Recently, it has begun a very sophisticated program to market this concept and to increase the market share that DR now enjoys.

As difficult and tedious as this battle has been and will continue to be, it is essential that we continue to fight it for our patient's best interests. I applaud your efforts and wish you all good luck.

*Curtiss W. Daughtry, DDS
Florence, South Carolina*



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Mouthrinses as an Antibacterial Adjunct in Periodontal Treatment

Frédéric Simard

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Introduction

Conventional periodontal therapy involves the recognition of the role played by bacteria in the formation and progression of periodontal diseases. The build-up of supramarginal plaque induces an inflammatory response^{1,2} favoring the accumulation of gram-negative bacteria in the sulcus and periodontal pockets. Many such gram-negative bacteria appear in periodontal diseases.³

The need for disease prevention logically leads to the removal of plaque, as this is where the problem originates. Yet many patients have neither the requisite dexterity nor the willpower to maintain good oral hygiene. Everyone agrees, however, on the importance of keeping bacterial plaque under control, first by scaling and root planing, then by daily, thorough maintenance by the patient at home.

Ordinary easy-to-use mouthrinses have proved to be most helpful to patients attempting to maintain good oral hygiene. However, consumers are faced with such a wide variety of products to choose from that professional assistance in selecting an appropriate mouthrinse has become a necessity.

In this paper, we present a survey of mouthrinses reputed to have anti-plaque and anti-gingivitis properties. Although all

mouthrinses are considered to be antibacterial, it is important to ask if this is really the case.

Chlorhexidine

Chlorhexidine digluconate remains the most studied and effective anti-plaque agent.⁴ Peridex, a commercialized chlorhexidine digluconate containing 11.6 per cent alcohol, with a pH of 5.5, is accepted by the American Dental Association (ADA) and the Food and Drug Administration (FDA) for the control of bacterial plaque and gingivitis.

The therapeutic action of Peridex stems from its capacity to reduce the formation of the pellicle, and weaken the alteration of bacterial absorption, bacterial adherence to the tooth and the cell wall, causing cellular lysis.

Stannous fluoride interferes with the action of chlorhexidine. The American Academy of Periodontology (AAP) recommends a 30- to 60-minute interval between using stannous fluoride and chlorhexidine because otherwise the effect of both is reduced.

Short-term studies⁵ report a 60 per cent reduction of plaque and gingivitis in patients using chlorhexidine-based rinses, while four long-term studies performed on over 700 patients found a 55 per cent reduction in plaque and a 48

per cent in gingivitis.⁶⁻⁹ No long-term studies have reported the development of resistant colonies.

Two studies, one conducted on a short-term basis⁵ and the other over a six-month period¹⁰ suggest that chlorhexidine appears to be significantly more effective for controlling plaque and gingivitis than the essential oils (Listerine) and sanguinarine (Viadent). However, chlorhexidine causes tooth stains and increases the formation of calculus.⁷

It is now generally believed that chlorhexidine provides a good way to begin periodontal treatment, but that for most individuals, the frequency of its side effects, especially staining, precludes its usage on a long-term basis.¹¹⁻¹³ In addition to the build-up of stains and calculus, reversible desquamation and an alteration in taste have been reported in children using chlorhexidine rinses. Nonetheless, in a recent study¹⁴ Winer et al observed that the group using chlorhexidine and peroxy showed far less tooth staining than the group using chlorhexidine alone or a placebo. This could offer a new avenue for professionals in dental care. The substantivity of chlorhexidine (0.1 per cent) is advantageous, and it currently seems to be the most effective agent for reducing bacterial plaque and gingivitis when used twice daily.

Essential Oils

Listerine, a composite of essential oils (thymol, menthol, eucalyptol and methylsalicylate), is the only mouthrinse that has been on the market for over 100 years. Yet its effects on plaque and gingivitis were only studied recently. Listerine comes in two compositions. Only one composition, containing 21.9 per cent alcohol with pH 5.0, is dealt with here, since the conclusions with respect to the second composition were not published at the time this paper was written.

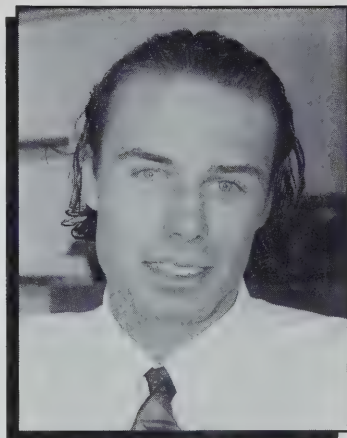
Listerine's action is due to an alteration of the cell wall. Short-term studies show an average 35 per cent reduction of bacterial plaque and gingivitis, while long-term studies emphasize a 25 per cent reduction of bacterial plaque and a 29 per cent decrease in gingivitis using Listerine.¹⁵⁻¹⁷

A six-month study comparing Listerine to chlorhexidine was unable to establish a difference between the rate of reduction of gingivitis and that of bacterial plaque.¹⁸ In addition, Siegrist et al did not note any significant difference between Listerine and the placebo with regard to the frequency and severity of gingivitis, gum bleeding and plaque build-up.⁵

Elsewhere, De Paola et al substantiated a 34 per cent decrease in gingivitis and plaque with Listerine.¹⁹ Other researchers also observed a significant decrease in dental plaque with Listerine as compared to the placebo.^{20,21} The substantiveness of Listerine, used twice daily, does not seem as interesting as that of chlorhexidine, however. Listerine mouthrinse is accepted by the American Dental Association (ADA).

Sanguinarine

The active cationic agent in Sanguinarine is benzophenathradine, a derivative of the bloodroot plant (*Sanguinaria Canadensis*). A concentration of 0.03 per cent of the extract is equivalent to 0.01 per cent of sanguinarine and to 0.2 per cent of zinc chloride. Results of studies with sanguinarine also seem to contradict



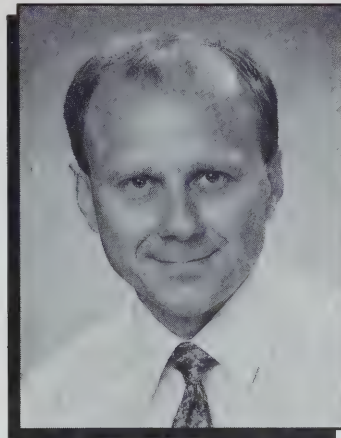
Mr. Frédéric Simard

one another. Some of them report a significant decrease in plaque and gingivitis,²¹⁻²⁴ while others observe little or no effect.^{5,25-29} Yet when used in conjunction with a dentifrice also containing sanguinarine (thereby reducing the interval of time between tooth-sanguinarine contacts), a significant decrease in plaque and gingivitis is noted.³⁰

Sanguinarine acts by altering the bacterial surface, hence reducing build-up and adherence. The substantiveness proves to be weak and unreliable, and a re-evaluation is required. The side effect most often reported is a burning sensation on the buccal mucosa. Marketed by Viadent, this product contains 11.5 per cent alcohol and has not received the approval of the ADA.

Ammonium Quaternary Composites

Cetylpyridinium chloride (CPC), an ammonium quaternary, is a cationic agent, which explains the anionic surface attraction of teeth and plaque. CPC is found in the composition of many mouthrinses. Cepacol and Scope — two of the most widely-known products in the CPC group — have a concentration of 0.05 per cent and 0.045 per cent CPC, respectively. In addition, Scope contains 0.005 per cent of domiphen bromide. Both



Dr. René Guy Landry

products contain between 14 and 18 per cent alcohol, with pH varying between 5.5 et 6.5.

Despite its high oral retention and an antibacterial activity comparable to chlorhexidine, CPC demonstrates a significantly lesser efficacy than chlorhexidine in reducing plaque.^{31,32} The drop in its antibacterial activity once it is absorbed probably explains this result.³³ A six-month study highlights a reduction of 14 per cent of bacterial plaque and of 24 per cent in the incidence of gingivitis.³⁴

CPC's actions are based on an increase in the permeability of the cell wall, thereby favoring cellular lysis after affecting cellular metabolism. The down side is that the cell loses its capacity to adhere to the surface of the tooth. The ADA has not approved mouthrinses containing CPC.

Triclosan

Recently, a non-cationic mouthrinse containing 0.2 per cent to 0.3 per cent of triclosan has come out on the European market. Deasy et al,³⁵ in a five-day study, established a 28.15 per cent reduction of plaque as compared to a placebo. The effect of this mouthrinse appears even more evident on hard-to-brush teeth. Also, the detergents contained in dentifrices do not affect the action of this mouthrinse, and patients may rinse their mouth before or after brushing without fear of

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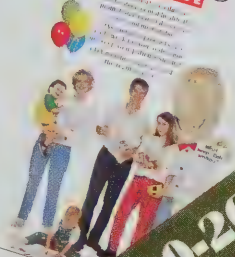
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eliminating the positive effect of the mouthrinse.³⁶ The ADA has not given its assent to triclosan-based mouthrinses.

Pre-Brushing Mouthrinses

Plax, the brand name of a mouthrinse meant to be used before brushing, theoretically assists in dislodging plaque. Almost all studies have been conducted on a short-term basis.³⁷⁻³⁹ Studies following a rigorous protocol prove the inefficiency of this product⁴⁰⁻⁴⁶ in reducing bacterial plaque, gingivitis and calculus build-up. A few very short-term studies show the efficacy of Plax when used alone or before brushing.⁴⁶⁻⁴⁸ As such, Plax is not antibacterial, and despite its active agent (sodium benzoate). It contains 7.5 per cent alcohol. The ADA refused to approve the product.

Fluorides

The most commonly-used topical fluorides are stannous fluoride, acidulated phosphate fluoride and sodium fluoride. Stannous fluoride is of particular interest to us. Long-term studies provide statistic evidence of its incapacity to reduce bacterial plaque.^{49,50} In addition, a report from the University of Minnesota, published in *News in Periodontics*,⁵¹ concludes that 0.4 per cent SnF₂ or 0.22 per cent NaF in gel form does not in any way modify the clinical signs of gingivitis when compared to a placebo in gel form.

The three types of topical fluoride all present a similar reduction for the percentage of sites with bleeding on the one hand, and the gingival index on the other. The ADA accepts stannous fluoride for its anticaries property, but not for its capacity to reduce bacterial plaque or gingivitis.

Oxygenating Agents

It must first be specified that the chronic use of oxygenating agents raises serious safety concerns.^{52,53} Paul Keyes' technique suggested the use, among other things, of hydrogen peroxide in the second phase of a treatment plan.^{54,55} Ac-

cording to current sources, this technique is no longer in use, however. The most recent studies eloquently demonstrate the futility of the second phase of a treatment plan combining the use of peroxide and sodium bicarbonate. The ADA does not accept any of these oxygenating agents.

Benzylamine

The benzylamine HCl, found in Tantum, is primarily a gargling solution. This is not to be confused with a collutory, since by definition the collutory plays the part of a medicinal antiseptic intended to act on the pharynx by pulverization or dabbing. Benzylamine HCl may be used as a mouthrinse after periodontal surgery. The gargling solution mainly acts as a local anesthetic⁵⁶ and anti-inflammatory agent.

In the same study, the use of Benzylamine greatly improved the gingival index and the control of postoperative pain. Issa and Turnbull⁵⁷ conclude that benzylamine demonstrates a less effective antiplaque effect when the plaque index is less. The ADA does not recognize Tantum.

Conclusion

Owing to its ease of use and accessibility, a mouthrinse provides an adjuvant that should not be neglected for simple prevention or periodontal treatment. A host of product choices is available to the patient, and the dental professional must be able to provide informed advice. The popularity of certain mouthrinses on the market leads one to believe that channels of communication between dentists and patients leave something to be desired. Dentists must continuously keep abreast of new developments in this field and inform their patients. Desirable properties of an effective mouthrinse include the ability to combat bacterial flora specific to gingivitis and the ability to demonstrate substantivity, while not causing disagreeable side effects. Two preferable agents are chlorhexidine and essential oils (Listerine). ■

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Dr. René Guy Landry is vice-dean, faculty of dental medicine, Université Laval, Québec.

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SCIENTIFIQUE



Comment prévoir les prémolaires supérieures à trois racines?

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SOMMAIRE

Soixante prémolaires supérieures extraites, dont 55 premières et cinq deuxième, ont été classifiées en trois catégories selon l'origine de leur trifurcation. Les dimensions mésio-distales des racines buccales, prises à différents niveaux, ont été comparées avec celle du collet. Sur toutes les dents examinées, les profils proximaux des racines étaient parallèles entre eux sur leurs deux tiers cervicaux ou bien la dimension mésio-distale au tiers moyen ou au tiers apical était plus grande que celle du collet. Si ces observations sont présentes lors de la lecture d'une radiographie, le dentiste peut présumer que ces dents possèdent trois racines.

ABSTRACT

Sixty extracted maxillary premolars, 55 firsts and five seconds, were classified into three categories according to the beginning of their trifurcation. The mesiodistal dimensions of the buccal roots, at different levels, were compared with the mesiodistal diameter at the cervix. Among all teeth examined, the proximal profiles of the roots were parallel in the two cervical thirds, or the mesiodistal dimension at the middle third or apical third was greater than this at the cervix. If these observations are visualized on the radiograph, the dentist can presume that these teeth have three roots.

Introduction

La connaissance détaillée de la morphologie radicaire peut souvent aider le dentiste lors d'un diagnostic ou de l'exécution de certains traitements. En consultant la littérature, il faut admettre qu'il y a peu d'études qui traitent des prémolaires supérieures permanentes à trois racines. L'auteur de cet article a entrepris une recherche afin de prévoir les cas où ces dents possèdent trois racines.

Revue de littérature

Des études récentes ont démontré que 5 p. cent des premières prémolaires supérieures¹ et 0,5 p. cent des deuxième prémolaires supérieures² possèdent trois racines. Cependant, une revue de littérature montre qu'il y a peu de détails concernant la morphologie radicaire de ces prémolaires à trois racines. Certains auteurs³⁻⁷ ne parlent que de la distribution de ces racines, c'est-à-dire une mésio-buccale, une disto-buccale et une palatine. Quant à Bellizzi et Hartwell,⁸ ils classent ces dents en trois catégories sans spécifier laquelle est rencontrée le plus souvent et sans stipuler combien de dents ont servi à leur étude. Un autre article, écrit par Sieraski, Taylor et Kohn,⁹ rapporte que les prémolaires supérieures ont souvent trois racines si la largeur mésio-distale du milieu de la racine est égale ou plus grande que celle de la couronne. Selon eux, cette loi n'est pas abso-

lue. Comme dans l'ouvrage précédent, le nombre de dents n'y est pas indiqué.

Constatant le peu de précision sur le sujet, l'auteur de cet article a entrepris une recherche afin de savoir combien de prémolaires supérieures sont rencontrées dans les trois catégories décrites par Bellizzi et Hartwell. De plus, il a démontré comment il est possible de prévoir les cas où ces dents possèdent trois racines.

Matériel et méthode

Pour cette étude, 60 prémolaires supérieures, dont 55 premières et cinq deuxième, ont été sélectionnées à partir de dents extraites qui provenaient de différentes cliniques dentaires et laboratoires de pathologie de certains centres hospitaliers. L'âge, le sexe, la race des patients et la raison des extractions ne sont pas connus. Les dents ont trempé dans une solution de 6 p. cent d'hypochlorite de sodium pendant trois heures, ont été rincées à l'eau courante durant une demi-heure et brossées pour enlever les résidus. Ces prémolaires ont été identifiées selon les différentes caractéristiques de la couronne.

Ensuite, les dents ont été groupées en trois catégories selon la classification de Bellizzi et Hartwell⁸:

Catégorie A: séparation des trois racines au niveau d'une partie du tiers apical ou séparation seulement des racines buccales dans

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Fig. 1 : Premières prémolaires supérieures appartenant à la catégorie A.



Fig. 2 : Premières prémolaires supérieures appartenant à la catégorie B.

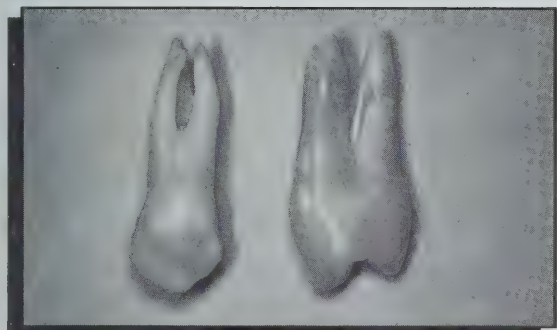


Fig. 3 : Premières prémolaires supérieures appartenant à la catégorie C.



Fig. 4 : Photographie d'une radiographie illustrant le parallélisme radiculaire des profils proximaux d'une première prémolaire supérieure droite. La dent extraite montrait trois racines.

une partie du tiers apical et une séparation plus cervicale de la racine palatine (**fig. 1**).

Catégorie B : séparation des racines buccales dans tout le tiers apical ou jusqu'au milieu de la racine avec une racine palatine semi-fusionnée ou se rendant jusqu'au tiers cervical (**fig. 2**).

Catégorie C : séparation des trois racines partant du tiers cervical (**fig. 3**).

Puis, un vernier a servi pour comparer la largeur mésio-distale des racines buccales et du tronc radiculaire aux tiers cervical, moyen et apical afin de comparer ces dimensions avec celle du collet de la dent.

Résultats et discussions

Le **tableau I** représente la répartition des prémolaires supérieures selon les trois catégories. Ainsi, 35 p. cent de ces dents appartiennent à la catégorie A, c'est-à-dire 19 premières et deux deuxièmes. Dans la catégorie B, 45 p. cent des

prémolaires s'y retrouvent et consistent en 27 premières prémolaires. Neuf premières et trois deuxièmes, soit 20 p. cent, se classent dans la catégorie C. Notons que seulement sept prémolaires, dont six premières et une deuxième, montrent une bifurcation radiculaire palatine qui occupe seulement une partie du tiers apical. Sur toutes les autres dents, la racine linguale débute au tiers moyen ou au tiers cervical.

Le **tableau II** montre les résultats et la répartition des prémolaires dans chacune des catégories lorsque, à l'aide d'un vernier, les dimensions mésio-distales des racines à différents niveaux sont comparées à celle du collet et non pas à celle de la couronne, comme il était mentionné dans l'étude de Sieraski, Taylor et Kohn.⁹ Ainsi, 77,33 p. cent des prémolaires supérieures, c'est-à-dire 20 de la catégorie A, 20 de la catégorie B et quatre de la catégorie C, montrent la même largeur mésio-distale du collet jusqu'à la jonction du tiers

apical et du tiers moyen. Dans cette situation, les profils proximaux des racines sont parallèles entre eux sur leurs deux tiers cervicaux. Seulement 16 prémolaires, dont une de la catégorie A, sept de la catégorie B et huit de la catégorie C, soit 26,66 p. cent, montrent une dimension mésio-distale qui, dans leur tiers moyen ou apical, excède celle du collet.

Comme les prémolaires supérieures des catégories B et C montrent des racines buccales plus longues que celles de la catégorie A, elles sont donc plus facilement décelables sur les radiographies. Cependant, dans la catégorie A, où la bifurcation radiculaire buccale n'est visible que dans une partie du tiers apical, il est donc plus difficile de les récupérer sur les clichés radiologiques. Dans cette catégorie, il y a seulement une dent sur 21 où les racines buccales excèdent le tiers cervical du tronc radiculaire. Dans tous les autres cas, le parallélisme des profils proximaux du

Tableau I

La répartition des prémolaires supérieures selon les trois catégories.

		Catégorie A	Catégorie B	Catégorie C	TOTAL
Premières prémolaires supérieures	Nombre de dents	19	27	9	55
	%	34,55	49,09	16,36	100
Deuxièmes prémolaires supérieures	Nombre de dents	2	—	3	5
	%	40	—	60	100
Premières et deuxièmes prémolaires supérieures	Nombre de dents	21	27	12	60
	%	35	45	20	100

Tableau II

Répartition des prémolaires supérieures dans chacune des catégories quand la dimension mésio-distale des racines à différents niveaux est comparée avec celle du collet.

		Catégorie A		Catégorie B		Catégorie C		TOTAL
		Le 1/3 moyen égal au collet	Le 1/3 moyen ou le 1/3 apical plus large que le collet	Le 1/3 moyen égal au collet	Le 1/3 moyen ou le 1/3 apical plus large que le collet	Le 1/3 moyen égal au collet	Le 1/3 moyen ou le 1/3 apical plus large que le collet	
Premières prémolaires supérieures	Nombre de dents	18	1	20	7	3	6	55
	%	32,73	1,82	36,36	12,73	5,45	10,91	100
Deuxièmes prémolaires supérieures	Nombre de dents	2	—	—	—	1	2	5
	%	40	—	—	—	20	40	100
Premières et deuxièmes prémolaires supérieures	Nombre de dents	20	1	20	7	4	8	60
	%	33,33	1,66	33,33	11,66	6,66	13,33	100

tronc radulaire est visible tant sur les dents extraites que sur les radiographies (fig. 4).

Conclusion

Suite à cette recherche, il est donc permis de conclure que les prémolaires supérieures ont une grande possibilité de présenter trois racines si les profils proximaux des racines buccales et du tronc radulaire sont parallèles entre eux aux tiers cervical et moyen ou si la dimension mésio-distale au tiers moyen ou au tiers apical est plus grande que celle du collet. Le dentiste doit donc être très vigilant lors de la lecture d'un cliché radio-logique. Dans certains cas, des radiographies, prises sous différents angles, peuvent également aider à déceler les trois racines. ■

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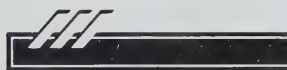
ALBERTA - Rocky Mountain Region:

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part-time motivated and caring asso-
ciate to join solo dentist. Please fax
inquiries to (403) 845-7610. (10/12)

ALBERTA - Edmonton: Wanted den-
tal employees and/or dental associ-
ates. West end dental clinic is extend-
ing its hours to all day and all night.
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onwards. References available.
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SASKATCHEWAN - Regina: Associateship sought. Part-time or full-time associateship sought by dentist with seven years experience for Regina and vicinity (within 45 minutes). Contact Tom at (306) 585-6313 or reply to CDA ACCESS Box # 2643. (10/12)

SASKATCHEWAN - Saskatoon: We are seeking an exceptional dental hygienist to join our progressive, state-of-the-art dental office. Our practice is hygiene driven with a strong commitment to treating periodontal diseases. We offer excellent working conditions, high standards of infection control, above average wages plus an extensive benefit package. This is an ideal full-time permanent position commencing immediately. Send resume to: Northend Dental, 150-227 Primrose Drive, Saskatoon, Saskatchewan S7K 5E4. Or call Dr. Stark at (306) 934-1177. (10/12)

SASKATCHEWAN - Prince Albert: Dentist with an interest in practising in a progressive environment (community-based health centre) is required immediately. Existing practice serves Prince Albert, two satellite villages, and coordinates a school-based dental project. Prince Albert is a city of 36,000 and close to many lakes. Please contact: Dr. Linea R. Lanoie, DMD, Co-operative Health Centre, 110-8th Street East, Prince Albert, Saskatchewan S6V 0V7. Phone: (306) 763-6464, fax: (306) 763-2101. (09/11)

MANITOBA - Thompson: Paid vacation to the Caribbean for one week! Unlimited outdoor adventures: skiing, fishing etc. Associate required immediately for very busy modern computerized practice. Emphasis on crown and bridge and restorative dentistry. Excellent remuneration. Call: (204) 677-4526, evenings (204) 778-8708. (09/11)

ONTARIO - Windsor: Wanted part-time orthodontist to work with female dentist in a busy family group practice. Call Gabe (519) 974-6120 (work) or (519) 979-1371(home). (10/10)

ONTARIO - Southwest Region: Periodontist and endodontist required for a multi-specialty practice. Part time initially with possibility of devel-

oping into a full-time partnership. Reply to CDA ACCESS Box # 2641. (10/12)

ONTARIO - Ottawa: Associate required for well established centrally-located general adult practice with hygienist. Send C.V. to CDA ACCESS Box #2629. (07/10)

ONTARIO - Toronto: Associate wanted for busy midtown (Davisville) practice - minimum two years experience. Please reply to CDA ACCESS Box # 2633. (08/10)

ONTARIO - Scarborough: Oral and maxillofacial associate required for well established practice in Scarborough, Ontario, with the option for a partnership within one year. Please respond to CDA ACCESS Box #2634, or fax (416) 752-5500. (08/10)

ONTARIO - London: Full-time associateship available immediately. We are seeking a highly motivated individual to join our dental team. We have a long-established, very busy family-oriented dental practice located in a modern Medical-Dental Building. We offer the latest in high-tech state-of-the-art equipment, great new patient flow as well as a well-trained highly-motivated staff. Excellent opportunity for an individual with a long-term interest. Call (519) 681-1905. (09/11)

DENTAL ASSISTANT

(*Francophone*) seeks position full time or short-term (i.e. maternity leave). Five years experience, excellent references. Call (514) 463-3572, would prefer a dental office within the province of Quebec. (10/10)

NEWFOUNDLAND - Marystown: Associate wanted for a brand-new custom-built dental office, equipped with all the latest and most modern equipment and conveniences. Interested persons are asked to contact immediately Peninsula Dental Services, Amanda Lambe, Office Coordinator (709) 279-4180. (05/10)

NOVA SCOTIA - Halifax: Associate required for busy general group practice, experience preferred. Potential for partnership. Please reply to CDA ACCESS Box # 2642. (10/10)

MARYLAND - USA Wanted Pediatric Dentist

Busy, established pedo-based group practice in Maryland Suburbs of Washington D.C. needs another board eligible/certified pediatric dentist. Excellent opportunity for permanence and ownership. Contact: Robert Morgenstein, DMD, 11301 Rockville Pike, N. Bethesda, MD 30895. Telephone: (301) 881-6170. (09/11)

Vacation Rentals

VACATION CONDO FOR RENT West Maui, Hawaii

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For brochure, before Dec. 20 call (417) 831-9919. Between Dec. 21 & Feb. 20 call (808) 669-6939. (10/10)

Meetings & Announcements

FEBRUARY 17 - 19, 1995 4th ANNUAL WHISTLER DENTAL & SKI SEMINAR

Delta Mountain Inn, Whistler, B.C. For information contact: Vancouver Chapter of Alpha Omega Fraternity, Louise Huber (604) 278-9877. (09/12)

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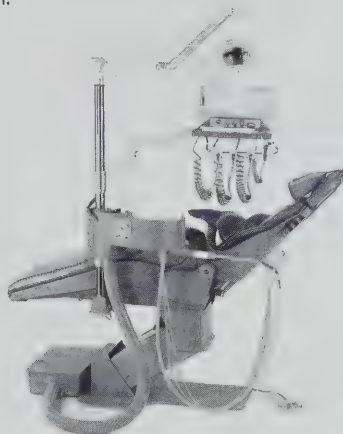
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(800) 423-5657 (USA & Canada)

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ONTARIO - Niagara Falls: For sale: Ormco X-ray, (dental) chair with hydraulic base, model #914 9001 never use. For best price call 1-800-267-7654 or (905) 356-7919. (10/12)

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Premier Dental 856, OBC

Teledyne 883

Miscellaneous

THE UNIVERSITY OF BRITISH COLUMBIA WITH THE KAMLOOPS DENTAL SOCIETY PRESENTS:

1995 Dental Travel and Learn Caribbean Cruise

- SUBJECT:** Oral management of HIV/AIDS.
- SPEAKER:** Dr. Sol Silverman, Jr., MA (physiology), DDS, Professor of Oral Medicine School of Dentistry, U. of California San Francisco.
- DATE:** February 18-25, 1995.
- SHIP:** Norwegian Cruise Lines *NORWAY*, the world's largest cruise ship!
- ITINERARY:** Departs Miami, visiting St. Maarten, St. Johns, St. Thomas, and Great Stirrup Cay in the Bahamas.
- TUITION:** \$250 for dentists, \$150 for others attending courses.
- FARES:** Begin at \$1600 Cdn. including air from many N.A. cities, hotel and transfers, etc.
- CONTACT:** CRUISE HOLIDAYS (exclusive!! travel agent for this cruise) Phone (604) 372-1970, collect calls accepted, or fax to: (604) 372-1630. Toll free in B.C. 1-800-665-6313.

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ADVANCE NOTICE! Details of the UBC Fourth Annual Travel And Learn Alaska Cruise will be available through CRUISE HOLIDAYS in October! (10/10)

One of the tools you need to survive and thrive in the '90s.

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DENTAL
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But there are others and we'd like to tell you about them. You are cordially invited to a one day seminar that's packed with practical, effective tips and advice on practice management, patient care, practice financial planning, team building and other tools you need to survive – and thrive – in the '90s.

Our presenter is one of Canada's recognized experts on practice management. Mr. Imtiaz Manji will show you strategies for success that have proven themselves in hundreds of practices from coast to coast.



Windsor
January 13, 1995

Winnipeg
May 5, 1995

Halifax
February 10, 1995

Hamilton
March 3, 1995

London
To be announced

Saskatoon
To be announced



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Surviving and Thriving in the '90s

Re-engineering your practice and life plan for success!

Strategies for Patient Care

- ✓ Discover how successful practices achieve 90% retention in hygiene.
- ✓ Determine how many hygiene days your practice really needs to meet patient care needs.
- ✓ Turn your patients into in-house marketers. Learn 9 times you can ask for a referral comfortably.
- ✓ Learn how to identify your patients' motivations and sidestep reasons to avoid treatment.
- ✓ Find out what patients want to know to accept ideal treatment & maintain optimum oral health.
- Minimize Downtime

Strategies for Transition Management

- ✓ Discover when and how to integrate an associate into your growing practice.
- ✓ Find out why "equity" associateships are so successful.
- ✓ Untangle practice stagnation and overcome saturation through transition options.
- ✓ Learn how to plan your calendar for the re-engineered practice.
- Maximize Practice Value

Strategies for Practice Financial Planning

- ✓ Learn to control practice expenses.
- ✓ Discover how to anticipate your cashflow and eliminate shortfalls.
- ✓ Find out the vital signs of financially healthy practices.
- ✓ Learn to play "what if's" before making important decisions.
- Eliminate Financial Stress

Strategies for Team Leadership

- ✓ Learn the 6 key factors in practice management that your team must understand.
- ✓ Adjust your team's job roles to increase productivity and maximize patient care.
- ✓ Discover how to set precise and realistic goals for team performance, accountability and incentives.
- ✓ Find out how team meetings and communication are essential in the successful practice.
- ✓ Learn 20 common mistakes dentists make which decrease team performance & increase overhead.
- Build a Highly-Motivated Team

Agenda 8:30: Sign-in • 9:00: Begin • 12:15: Break (lunch included) • 1:15: Resume • 4:00: Close

Pre-registration is required. There will be no on-site registrations. Register early since enrolment is limited.

OFFICE MANAGER/SPOUSE attending with dentist \$80

DENTIST \$160

SUBTOTAL

GST 7% of subtotal (#R106845209)

TOTAL

Number Total

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Name: _____ CDA Membership #: _____

Street: _____ City/Province: _____

Postal Code: _____ Telephone (Office): _____ Seminar Location: _____

A receipt for the above registration fees will be issued to: _____

☐ Cheque made payable to the Canadian Dental Association enclosed. (No post-dated cheques)

☐ Visa

☐ MasterCard

Signature: _____ Credit Card #: _____

Expiry Date: _____

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Canadian Dental Association, Member Services, 1815 Alta Vista Drive, Ottawa, ON, K1G 3Y6

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ANNOUNCEMENTS

National Highlights

November 23, 1994

Toronto Academy of Dentistry Winter Clinic

Toronto, Ont.

Contact: Mrs. Raisyl Wagman
(416) 967-5649

March 2-4, 1995

B.C. Dental Meeting

Vancouver, B.C.

Contact: Marilynne Webster
(604) 736-3645

November/Novembre 1994

November 3: Dental Nutrition Course in Burnaby, B.C. This continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ontario) 1-800-937-8878.

November 3-5: The Croatian Dental Society and the School of Dentistry, University of Zagreb, are organizing the 1st World's Congress of Croatian Dentists, which is to be held in Zagreb. For information contact: AS - Kongresni Servis, Lastovska 23, 41 000 Zagreb, Croatia. Tel.: 385 41 624 100, 624 101 or Fax: 385 41 624 424.

November 3-5: The American College of Prosthodontics — Annual Session at the Hyatt Regency Hotel, New Orleans, La. For information, contact: The American College of Prosthodontists. Tel.: (210) 829-7236.

November 9: Dental Nutrition Course in Victoria, B.C. This continuing education program is sponsored by Biomed. For information please call (510) 450-1650. To register call (from B.C. or Ontario) 1-800-937-8878.

November 12: The Ontario Dental Society of Anesthesiology's Annual Fall Meeting is being held at the Hilton International in Toronto, Ont. Speakers will be Dr. Ray Dionne and Dr. Dan Becker. For information contact: Hartley

Kestenberg, 101-305 Milner Ave. Scarborough, Ont. M1B 3V4. Tel: (416) 299-5449.

November 17-19: Odontologisk Riksstämman/Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

November 22-25: Congrès de l'Association Dentaire Française in Paris, France. For information, contact: Dr. Alain Deyrolle, 92 Avenue de Wagram, 75017, Paris, Tel.: (33) 1 42 27 89 00.

November 22-25: XIIIth International Dental Film and Video Festival in Paris, France. For information, contact: Dr. Maurice Dolovici, Secrétaire Général, Association Dentaire Française, 92 avenue de Wagram, F-75017 Paris, France.

December/Décembre 1994

December 25-January 1: Alpha Omega International Dental Fraternity's Annual Convention to be held at the Marriott Eaton Centre Hotel in Toronto, Ont. For information contact: Sheila Guston, Executive Director, 347 Fifth Ave., #703 New York, N.Y. 10016. Tel: (212) 683-4155 or Fax: (212) 683-0027.

January/Janvier 1995

January 19-22: 20th Yankee Dental Congress to be held in Boston, Mass. For more information contact: Dr. Shepard S. Goldstein, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Mass. 01760-4144, U.S.A. or call (508) 651-7511.

February/Février 1995

February 4-11: 34th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The In-

ternational Dental Foundation, 53 Sloane St., London, SW1X 9SW, U.K. Tel: 44 (0) 71 235 0788 or Fax: 44 (0) 71 235 0767.

February 6-12: Barbados Dental Association — 7th Annual International Mid-Winter Meeting 1995 Theme: Emerging Technologies in Dentistry — Implants Endodontics. For information contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

February 15-19: The Jamacia Dental Association's 31st National Convention will be held at the Jamacia Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Fla. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Fla. 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

February 23-26: Chicago Dental Society — Midwinter Meeting to be held in Chicago, Ill. For more information contact: CDS, 401 N. Michigan Ave. Suite 300, Chicago, Ill 60611-4205, U.S.A.

February 24-25: American Academy of Fixed Prosthodontics meeting to be held in Chicago, Ill. For more information contact: Dr. William Nequette, 14201 W. Greenfield Ave., New Berlin, Wis. 53151-1697, U.S.A.

February 26 - March 5: Virgin Island Dental Association Convention. For convention pre-registration and group travel arrangements please contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial

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Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst N.S.W. 2010. Tel: 61-2-331 6920 or Fax: 61-2-331 7296.

March 2-4: Academy of Osseointegration's 10th Annual Meeting to be held in Chicago, Ill. For more information contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Ill., 60611-4267, U.S.A.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatietäisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

March 16-18: Academy of Sports Dentistry in Anaheim, Calif. For information contact Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel.: (905) 823-2008 or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont., L8R 3M2. Tel.: (905) 577-0770 or Fax (905) 577-0721.

March 18-22: 28th Australian Dental Congress to be held in Hobart, Australia. For information contact: Ms. Beth Pocock or Ms. Sally Philpott, Mures Convention Management, Victoria Dock, Hobart, Tas 7000. Tel: (002) 312 121 or Fax: (002) 344 464.

March 25 - April 1: 35th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane Street, London SW1X 9SW, U.K. Tel: 44 (0) 71-235-0788 or Fax: 44 (0) 71-235 0767.

April/Avril 1995

April 7-8: Southern Ontario Surgical Orthodontic Study Goup meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel: (519) 258-2632 or Fax: (519) 258-2637.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AAACD Executive Office at 1-800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June/Juin 1995

June 1-3: BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 8-11: 5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 12-15: 1995 Rontgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 28 - July 1: International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3: XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information

contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary

August/Août 1995

August 23-26: XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel: (201) 783-6300 or Fax: (201) 783-1175.

October/Octobre 1995

October 4-8: 136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave, Chicago, Ill., 60611, U.S.A. Tel: (312) 440-2658 or Fax: (312) 440-2707.

October 31 - November 4: Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November/Novembre 1995

November 15-17: Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

Dedember/Décembre 1995

December 25 - January 1, 1996: Alpha Omega International Dental Fraternity — Annual Convention to be held in Tarpon Springs, Florida. For more information contact Sheila Guston, executive director, 347 Fifth Ave., #703, New York, NY 10016, USA. Tel: (212) 683-4155 or Fax: (212) 683-0027.



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Continuing Education 1994 — 1995

University of Toronto

November 24-26: Nitrous Oxide in Dental Practice

This course will be presented by Dr. Earle R. Young and Staff.

December 9: Endodontic Surgery Review

Presented by Dr. J. Edelson and the Endodontic Department Staff.

January 14: Pharmacology Review

This course will be presented by Dr. D. Haas and Dr. H. Grad.

February 17-18: Preventive Dentistry Forum — Home Care Products and Office Procedures for the Preventive-oriented Dental Practice

Presented by the University of Toronto's Faculty of Dentistry Preventive Dentistry Department under the direction of Dr. Hardy Limeback

February 24-25: Success with New Treatment Modalities in Restorative Dentistry

This course will be presented by Drs. Dorothy McComb, James Brown and Laura Tam. Guest speaker: Dr. Izchak Barzilay.

For information contact:

Office of Continuing Dental Education
Faculty of Dentistry
University of Toronto
124 Edward St.
Toronto, Ont.
M5G 1G6
Tel: (416) 979-4902 Ext. 4503
Fax: (416) 979-4936

Dalhousie University

November 19: X-Ray X-Cel-lence — Part I

Presented by Dr. Barry Pass and Dr. Tom Blackmore

November 26: Dental Assistants in the Lab — Part II

With Heather Greenwood, R.D.T.

December 3: Incorporating Periodontics Into General Practice.

Presented by Dr. William J. Killoy

December 10: Making It Work (Comprehensive clinical application of advanced restorative techniques)

Presentation by Drs. Jack Gerrow and Dan Macintosh.

For information contact:

Continuing Dental Education
Faculty of Dentistry
Dalhousie University
Halifax, N.S.
B3H 3J5
Tel: (902) 494-1674
Fax: (902) 494-2527

Edmonton & District Dental Society

November 14: Periodontics

Speaker: Dr. Ken Korman

January 20: Endodontics

Speaker: Dr. John West

February 24: G.P. Oral Surgery

Speaker: Dr. Karl Koerner

March 17: Technology/Marketing

Speaker: Mr. Imtiaz Manji

For information contact:

Edmonton & District
Dental Society
P.O. Box 41124
Edmonton, Alta.
T6J 6M7
Tel/Fax: (403) 463-1558

University of Western Ontario

October 29: Lightspeed Endodontics "New Instrumentation for Root Canal Preparation"

Guest lecturers: Dr. E.S. Senia, The University of Texas, San Antonio and Dr. W. Wildey, Hurst Tex.

December 1-3: Crown and Bridge Back to Basics — Current Concepts and Future Trends.

December 2: Basic Rescuer C.P.R. New and Re-Certification — Infant, child and adult techniques.

For information contact:

The University of Western Ontario
Continuing Dental Education
Faculty of Dentistry, C.D.E.
Room 1003, Dental Sciences Building
London, Ont.
N6A 5C1

University of Manitoba

November 19: Practical Periodontics

Dr. James Simonds, lecturer

November 26: Personal Financial Planning for Dentists

Lecture by Dr. H. Jack Stockton (Brandon, Man.)

December 3: Alpha Omega Memorial Lecture — Predictably Successful Endodontics

Dr. Donald Yu, lecturer

February 17-18: Level II Complexity Basic Molar Root Canal Therapy

Lecture and laboratory participation with Drs. W. Christie, M. Peikoff, W. Acheson & H. Fogel

February 25: Medical History: Assessing the Risks of Treatment

Lecture by Ms. Eunice Edgington

March 4: The Practical Application of the Carbon Dioxide Laser in Restorative Dentistry

Lecture and laboratory demonstration by Dr. Cary Ganz

March 16-18: An Oral Surgery Update for the General Practitioner

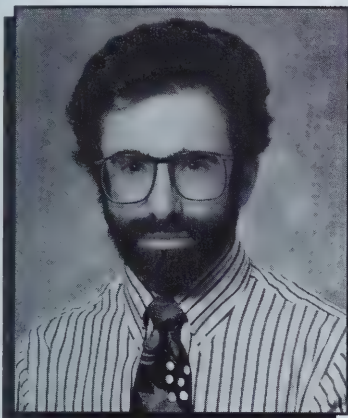
Lecture & clinical demonstration by Drs. J. Curran & M. Mohen

For information contact:

University of Manitoba
Continuing Dental Education
780 Bannatyne Ave.
Winnipeg, Man.
R3E 0W2

GUEST EDITORIAL

INFECTIOUS DISEASE, INFECTION CONTROL AND THE EFFECT OF A FLORIDA CLUSTER OF CASES OF HIV INFECTION



Joel B. Epstein, DMD, MSD

In July 1990 the Centers For Disease Control (CDC) in Atlanta released initial information regarding the possible transmission of HIV to a patient during dental treatment. In the four years that followed, the so-called Florida case has had a considerable effect on infection control practices in all health care settings.

CDC's initial information described a cluster involving the possible transmission of HIV to six patients seen within the dental practice of Dr. David Acer. Subsequent investigation has shown that dental instrumentation was not associated with transmission in this cluster of cases.¹⁻⁴ Furthermore, no other cases of HIV transmission have been identified in any other health care or dental setting.⁵

The fact that six potential cases of HIV transmission from dentist to patient have been identified in a single cluster, when none are known to have occurred in any other health care setting despite detailed analyses of patients in the care of HIV-positive practitioners, indicates that the Florida cluster is unique. It also confirms a statistically

zero-risk (unmeasurable) of HIV transmission to patients from HIV positive providers. This suggests that the Acer incident may be due to unusual or unique events occurring in the Florida cluster, or that the transmission of HIV did not occur in this setting at all.

Much of the evidence that led CDC to suggest the possible transmission of HIV in the Florida cluster concerned the apparent lack of any other risk factors in the patients' history, as well as similar DNA sequencing between the dentist's virus and those of the six patients.

Recent investigations, as reported by *60 Minutes*, an American current affairs television program, suggest that the individuals identified may have had risk factors for HIV transmission that were not revealed in the histories taken by CDC investigators.

The initial case involved Kimberly Bergalis. Although she denied other risk factors when she was interviewed by CDC, there was evidence presented to the effect that a gynecologist had examined Miss Bergalis and identified the human papilloma virus (HPV-18). This is a sexually-transmitted virus. In addition, there was evidence suggesting that she had previous relations with one or more sexual partners.

In another case, Ms. Barbara Webb, a 68-year-old retired teacher, was later identified as having been a blood recipient between 1975-1985. It was also revealed that she had been involved in an extra-marital affair in the prior 15 years.

Another individual, Mr. Richard Driskill, was reported to have had sexual exposure to at least two HIV-infected prostitutes.

Other risk factors in this case included a possible homosexual relationship as well as possible drug use. Ms. Lisa Shoemaker, a 37-year-old carnival worker, had stated that she may have contracted the HIV virus from a former boyfriend. Mr. John Yeks was a known intravenous drug user and had sexual contacts with prostitutes including, possibly, a woman who died of AIDS in 1991. Ms. Sherry Johnson, the last of the six patients, had sex with several men while in her teenage years.

The similarity in viral strain between the HIV of the dentist and the six patients, and the dissimilarity between a common community strain, provided additional evidence for the possible transmission of HIV from the dentist. However, further testing of the community virus in this region later identified similar strains within the community that had not been previously noted in the initial small sample.

This new evidence clearly puts the validity of CDC's initial information in question. Further investigation has shown that all six cases in this potential cluster probably experienced high-risk exposures that were not included in their histories. Furthermore, the DNA evidence is now only suggestive of the possibility of HIV transmission from the health care provider to patient, and does not rule out the possibility of community sources of transmission with a similar virus strain. Many individuals may have reason to deny other risk factors in their health history, which is well known to those who acquire medical histories, particularly those related to possible sexually-transmitted disease.

Another potential cause of transmission in the Florida case may be accidental exposure. HIV-infected individuals can develop a central nervous system (CNS) infection that effects their sensory and motor skills, cognition, and emotions. Peripheral

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neuropathies are also common in HIV patients. Thus, as Dr. Acer's HIV infection progressed, it could have led to a reduction in motor skills and sensation such that he may have sustained a needle stick exposure during the course of treatment without realizing that such an exposure had occurred.

Other theories are based on the possibility that Dr. Acer was upset with the diagnosis and progression of his HIV infection, and that he intentionally transmitted HIV to patients in an attempt to increase public fear about AIDS and promote increased support for infected individuals, as well as increased funding for treatment and research.

However, it remains of little importance to determine whether the Florida case represents intentional or accidental transmission to the patients. Indeed, the true answer will never be known with certainty, and will always be subject to conjecture. What is of importance are the detailed studies and the extensive literature supporting the lack of any significant risk of transmission to patients from either HIV positive providers or dental instrumentation.

The Florida case has had a dramatic effect on infection control procedures. It has resulted in more and more resources being directed toward infection control, which has in turn reduced the resources available for health care services. This is particularly true in the Canadian system, where additional resources and funding have not been made available.

It is certainly necessary to identify the risk of transmission, understand the level of risk, and determine appropriate steps to reduce risk. However, an analysis of risk, particularly with respect to HIV transmission, does not support the comprehensive infection control procedures adopted in the dental environment in the aftermath of the Florida case.

While there is only a theoretical statistical risk that HIV transmission can occur in a dental environment, the transmission of the hepatitis B, herpes simplex, and hepatitis C viruses have actually been identified in dental practice.⁶⁻¹⁰ It is imperative that infection control guidelines are directed toward identified risks. Studies to identify the risks of infectious disease transmission during a dental procedure, as well as how to reduce detected risks, should be continued.

CDA has taken the responsible approach in this area. Before considering any changes to its existing policies and guidelines on infection control, the association has diligently attempted to identify actual risk. In other words, rather than trying to reduce unknown or non-existent risk, CDA has consistently looked for evidence of disease transmission before acting.

Ongoing studies of infectious disease, epidemiology and biology support CDA's general approach to the principles of infection control. New data may require CDA to consider modifying its policies and guidelines in future years. When evidence to suggest a change in the infection control guidelines is identified, this change must be made rapidly and widely. A review of current information has been suggested, and should be the responsibility of CDA so that national standards can be maintained. ■

Dr. Epstein is head of the division of oral medicine and clinical dentistry, Vancouver General Hospital; clinical professor in the faculty of dentistry, University of British Columbia; medical-dental staff, British Columbia Cancer Agency, Vancouver; and a research associate professor, University of Washington, Seattle, Washington.

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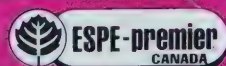
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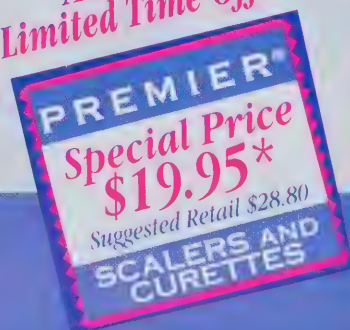
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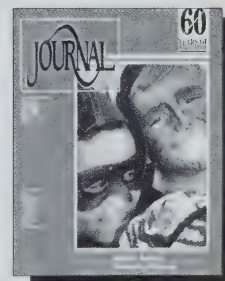
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LETTERS



Chlorzoin

In his article "Response to Dr. Lewis's Criticism of Chlorhexidine Varnish Therapy," Dr. H.J. Sandham acknowledges, just before his summary, that others have expressed the view "that Chlorzoin therapy should be considered as an alternative to more conventional preventive procedures, i.e., fluorides and advice on the appropriate use of dietary carbohydrates and oral hygiene" (*J Can Dent Assoc* 60(8):721-722, 725). Dr. Sandham then dismisses the idea that Chlorzoin should be considered "differently, or in isolation" from these methods. "Both Knowell and I are committed to the principle that Chlorzoin therapy

must be offered as a supplement to the usual preventive practices," Dr. Sandham wrote.

I have difficulty accepting this position — the insistence that we must embark with our patients on a program of drug-induced suppression of mutant streptococci, a bacterial member of our normal flora, which, as we are well aware, is implicated in the incidence of dental decay under certain conditions.

We live in a world of chemical control and alteration of our natural environment. Within us and around us, there is a veritable chemical soup that is consuming us — indeed, we consume it. All too often, drugs and chemicals are prescribed by the medical and dental profession to treat various conditions, when lifestyle changes alone would achieve the desired results of health enhancement.

Our patients must regain a sense of control and responsibility for their health. Dental Caries, particularly, offers them this opportunity to relate living habits with health outcome.

Why must we contribute to this chemical-based approach to treatment when substantial freedom from caries can be achieved in the vast

majority of our patients through safe and time-honored, proven methods involving adequate oral hygiene and sensible diet. Furthermore, potentially adverse side effects, cost-effectiveness, and the drug company's bottom line and marketing initiative need not even be considered.

To be sure, if and when I use Chlorzoin in my practice, it will be in situations where the severity of the disability or impairment of normal functioning renders the more conventional methods of caries control impossible or inadequate. Only then will I feel I have done my professional best for my patients.

Lorne D. Berman, DDS
Sechelt, B.C.

ERRATA

In the September 1994 "News Update" section (*J Can Dent Assoc* 60(9):766-769, 1994), a headline on page 766 should have read "**Montreal Dental Club Names New President.**" The heading and accompanying story inadvertently identified the Montreal Dental Club as the Montreal Study Club. The *Journal* apologizes for this error and any confusion it may have caused.

ABSTRACT

The Cost of Infection Control in Dentistry

All the costs associated with the current standards of infection control in dental practice have not to this point been covered in one specific article and existing studies cover only specific areas of infection control. This article examines all the cost factors a dental practice must consider when determining the financial impact of the current accepted standards. The lack of actual data to help determine the financial impact on a dental practice could contribute to a reluctance of some dentists to adopt current standards due to a fear of adverse financial impact on the practice. It is hoped that the publication of papers such as this one may help to allow dentists to adopt the use of universal precaution standards with proper financial preparation.

This study tabulated the cost associated with infection control practices at an American public dental clinic and used data provided by the American Dental Association to extrapolate this data to reflect the actual costs in private dental offices. The clinic used in this research consisted of 11 dentists with one chairside dental assistant each and six additional staff members. An average of 1,176 patients

were seen at this clinic every month. The author used both fixed and variable categories for consumable supplies, disposable items, services and sterilization, patient care maintenance and wages (labor). Contaminated waste disposal, room turnover time and medical immunization and testing of staff were also included in these calculations.

The clinic studied incurred a total cost of \$14.25 (U.S.) per patient for universal precautions. Of this, more than 75 per cent consisted of variable costs with only 11 per cent arising from disposable items such as gloves and masks. More than half the total cost was due to dentists' and assistants' labor in providing direct patient care. The consumer price index was then used to calculate the cost in 1993 and a figure of \$17.10 per patient was arrived at. The application of these figures to private dental practice requires some adjustment due to the use of multiple operatories and lower labor costs. The cost per patient of universal precautions in 1993 for private dental clinics was estimated to be \$13.15 (U.S.). The author suggests that these costs may be decreased by using disposable plastic barriers on surfaces and using labor effectively.

(Abstract: Diehnet D.E. *Comp. Cont. Ed. Dent.* 14: 1329-1335. Reprinted with permission from *The Dentaletter*, September 1994.)

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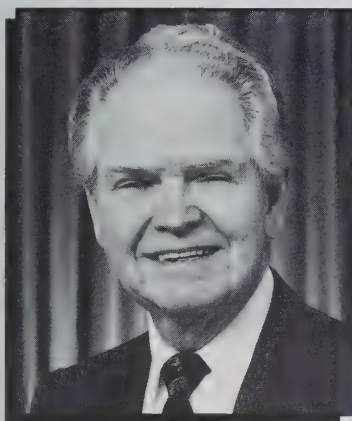
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Dr. P. Ralph Crawford,
Editor

I read a lot. Between perusing dental journals at the office and scanning several newspapers from front to back each evening — even some of the want ads — I probably absorb thousands of words every day. Even so, I still find time to skim my fair share of history books and even get into a bit of heavy philosophy now and then. But some of my favorite “literature” is what I call airport reading. I am a devotee of paperback thrillers.

Whenever I travel, I’m sure to pack at least a couple of the popular quick reads of the day. Authors such as Robert Ludlum, Lawrence Sanders, Frederick Forsyth, Jack Higgins and John Grisham have helped me while away many an hour in airport lounges and in the air. I know that none of these writers are likely to win a Nobel Prize for literature, but when I’m travelling I find their books more relaxing than heavier tomes.

Recently, however, one of Lawrence Sanders’ thrillers — *The Fourth Deadly Sin* — did pull me into more serious thought. This book is one of a series by the well-known American author. Three of his previous books dealt with sins

one, two and three. He has also written thrillers based on four of the Ten Commandments.

My Sunday school days have given me a reasonable grasp of the Commandments, but reading Saunders’ book I began to ponder about the number and kinds of sin. Perhaps it was just my guilty conscience that goaded me on.

Down through the years, I had heard reference made to the so-called seven deadly sins, but I really hadn’t given much thought to what these sins were, exactly, or what their genesis was. The titles of Saunders’ books piqued my curiosity.

I’ve since learned, with some chagrin, that the traditional seven deadly sins are pride, wrath, envy, lust, gluttony, avarice and sloth. With some trepidation, I admit that I have dabbled (and still do) in each of them.

The concept of seven deadly sins seems to have arisen in the 13th or 14th century, but it held considerable popularity with some Christian clerics as late as the 1900s. I was unable to trace the direct origins of the concept, although medieval scholars were prone to suggest that a kind of three-way relationship existed between each of the seven deadly sins, seven arch demons, and the seven virtues.

Being one of fanciful thought, I soon turned my mind to the implications of the seven deadly sins for dentistry and, behold, discovered a rather “back door” relationship between at least one of the sins and my beloved profession.

As dentists, we know that apart from its somewhat rare developmental, accidental and pathological causes, most dental disease is preventable. With adherence to a fairly simple regimen of brushing and flossing, aided by a few drops of fluoride and a decent diet, most of humanity would never have to see a dentist for anything except regular examinations and prophylaxis.

For another opinion on this topic, take a look at the letter from Dr. Lorne Berman of Sechelt, B.C., on page 934. Dr. Berman states it plainly, “substantial freedom from

caries can be achieved in the vast majority of our patients through the safe and time-honored, proven methods involving adequate oral hygiene and sensible diet.”

But the great majority of we humans are fraught with weakness. Dare we call it sin.

Of the seven deadly sins, sloth, perhaps more than any other, plays the greatest dental role. Think for a moment on how *Webster’s* defines sloth: “a laziness, especially habitual laziness.” Now relate that definition to caries and periodontal disease, and what may in all honesty be the primary cause of these conditions — a habitual laziness and neglect toward total oral health care.

Far too many Canadians still treat dentistry like the fire department. They only call for help when disaster strikes. In fact, nearly 40 per cent of Canadians only visit the dentist during a dental emergency, or avoid going at all for more than two years at a stretch. And many don’t brush and floss regularly, or watch their diet, in the meantime. Isn’t it a pity that this habitual neglect of oral health care — call it laziness, call it stupidity or call it sloth — is still one of the main contributors to dental disease and dental visits, and quite likely the biggest reason why dentists still provide restorative treatment.

The irony, of course, is that dentists work extremely hard to educate their patients about the perils of sloth. It’s part of this profession’s mandate, as stated in CDA’s mission, to promote the optimal oral health of Canadians. But at the same time, as the oral health of Canadians improves, the traffic in dental offices decreases. There is scarcely another business in the world that equates doing a good job with reducing the number of available clients.

We should take a great deal of pride in this endeavor. But isn’t pride another of the deadly sins? It seems as if we just can’t win.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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PRESIDENT'S COLUMN

A TIME FOR THANKS



Dr. Bryun Sigfstead,
President

Full has traditionally been a time to give thanks, not only for the fact that we live in a country where freedom of thought, speech and association are ours by right, but also for the many economic and social benefits that we enjoy as Canadians. We share a nation that is unscarred by war or strife, unparalleled in beauty, and rich in natural resources.

As dentists, we have much to be thankful for. Through self-regulation, we have the power to control our own destiny. And through CDA, our provincial associations, licensing bodies and local societies, we have the means to exercise that power for the benefit of all Canadians.

This year, however, as members of CDA, we have a special reason to give thanks. For six days this fall, from October 2 to October 8, we asked dentists from around the globe to join us in Vancouver for the 82nd FDI World Dental Congress. And they answered our invitation in droves. At last count, more than 14,000 dentists, hygienists, dental assistants and industry personnel attended FDI 1994.

It was and will remain a memorable week in the history of Canadian dentistry. Thousands of peo-

ple from around the world returned home from Vancouver with only positive things to say about Canada and Canadian dentistry.

With the success of FDI 1994, we reaped the benefits of a bountiful international harvest of sorts — a harvest born of a seed that was planted nearly 10 years ago. That seed was the shared vision of a few hard-working, dedicated individuals. It was the conviction that CDA could and should play host to an international convention, and the determination to make it happen.

The man in charge of nurturing the seed and bringing the crop to harvest was CDA's general chairman of conventions Dr. Michel Jahjah, who was ably assisted in this endeavor by his talented convention committee and his hard working staff. It was their magic and innovative thinking that made FDI not only the biggest convention ever held in Vancouver, but also the largest FDI World Dental Congress in history, and an event that we should all be proud of.

In many ways, FDI 1994 set a new standard of excellence for dental conventions, both by the smooth, efficient manner in which it was run, and by the richness and value of the continuing education opportunities and exhibits that Michel and his team put together. Who but Michel could have conceived of staging the opening ceremonies at 5 p.m. Monday, ripping down three stages overnight, and having the same floor space set up as a second exhibit hall by 9 a.m. the following morning? And who else could have pulled it off?

Over the years, there have been many examples of individual dedication to the dental profession, of people who made Canadian dentistry better through their vision and foresight. We owe all of them a great debt of gratitude.

Now there is a whole slate of new names to add to this list, starting with Dr. Jahjah and the members of his FDI 1994 organizing committee: Drs. Marcia Boyd, Wayne Chou, Robert Clarke, Ron Markey, Ted Ramage and James Stitch. We should also recognize the efforts of CDA's capable executive director, Mr. Jardine Neil-

son, as well as the contribution made by the dentists who have served on CDA's management committee and executive council over the past five years. On behalf of CDA and Canadian dentistry, I'd like to thank them all for creating a very memorable moment in our rich dental history, and for the magic they created in Vancouver.

But with FDI 1994 behind us, there are a number of questions that remain to be asked: Was all the effort worth it; can we place a value on hosting an international convention; and should we do it again?

Perhaps the best way to answer the first two questions is to put FDI 1994 in perspective. Ask your self this: Doesn't a convention of this size exemplify what professional associations are all about? Doesn't it satisfy our need for ongoing continuing education? Doesn't it provide us with an opportunity to analyze and compare the myriad of dental supplies and equipment available in today's marketplace? Doesn't it provide us with a chance for social camaraderie in a profession whose members are often isolated from one another?

Yes it does.

But hosting a convention of the size of FDI 1994 is no easy task. It requires a huge commitment of human resources over an extended period of time. FDI 1994 committed CDA to five years of intensive planning, followed by hectic on-site activity. Michel and his committee members are exhausted. It would be unreasonable, and likely impossible, to expect this type of gargantuan effort on a yearly basis, no matter how wonderful it would be to offer a dental meeting like FDI 1994 each and every year.

But we can and will continue to offer our members a worldclass dental meeting — albeit a smaller one — in years to come. I urge all of you to join us in Ottawa next August. It promises to be an excellent show.

*Bryun Sigfstead, DDS
President of the Canadian Dental Association*



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NOVEMBER, 1935

THE FORUM

THE INFLUENCE OF PASTEURIZATION UPON THE VITAMIN C, IODINE AND PHOSPHATASE CONTENT OF RAW MILK*

by W. B. Grandison, L.D.S., Edin., and D.B. Cruickshank, L.R.C.P.,
and S. Edin., D.P.H., L.D.S., Edin.

(Abstract of paper in *British Dental Journal*, March 15, 1935)

SINCE it is well known that milk, when boiled, and to a lesser degree when pasteurized, undergoes considerable alteration, it is hoped that the time will come when the need for pasteurization will no longer exist.

Even under ideal conditions of pasteurization, the destruction of the vitamin C content of the milk is from 20 to 40 per cent. There is a very decided loss of iodine, due to vola-

tilization, and phosphatase is completely destroyed if the milk is efficiently pasteurized.

The superiority of safe raw milk is a steadily growing conviction. The advantages of even "rapidly boiled" milk over pasteurized milk are well known to the pediatrician, and raw milk is considered superior in nutritional value even to pasteurized milk to which has been added cod-liver oil and orange juice.

* From the Dental Unit of Papworth Village Settlement.

DENTAL CARIES

IN FEBRUARY, 1930, there was initiated at Columbia University an extensive project for the investigation of the causes of dental caries. The progress report of work done up to February, 1934, was published in the *Journal of Dental Research*, August, 1934. The groups working on this problem conclude that the type of micro-organisms present in the mouth, the physical properties of the foodstuffs taken into the mouth, and the form and structure of the teeth, while important, do not alone account for the resistance of one individual and the susceptibility of another. It was found that the evidence warrants the assumption that the lactobacilli organisms are essential to the dental caries process, but mere presence of these organisms in a mouth is not alone sufficient to account for the production of dental decay. The results of experiments indicated that caries may on occasion be initiated through the agency of a highly potent external factor, but they also indicated that resistance to dental caries involves one or more systemic factors appar-

ently related to calcium-phosphorus metabolism.

It was found that ultraviolet-light therapy proved much more efficacious as a protective agent against dental caries than other sources of vitamin D. Additions to the diets of liberal amounts of the best known sources of vitamin C, in the form of oranges, orange juice, bananas, and tomato juice, had little effect on the incidence of dental caries; and it was concluded that the possible deficiency of Vitamin C in the dietary is not responsible for the great susceptibility of children to dental decay.

The report concludes with the statement that the results would indicate that the process of dental decay is associated both with environmental factors related to food retention and lactobacillus fermentation, and with physiological factors related to calcium-phosphorus metabolism, and that to date, evidence as to the mechanism whereby physiological influences operate suggests that they work through the interior of teeth rather than through the saliva.

— From *Journal of Dental Research*.

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VINCENT'S INFECTION

by P.G. Puterbaugh,
M.D., D.D.S., Chicago, Illinois
*Summary of paper in Journal
of the American Dental Association, November 1934.*

SUMMARY

THE diagnosis of Vincent's infection or gingivitis is based on the presence of the clinical symptoms of the disease and the findings of large numbers of the organism in smears obtained from the lesions.

Lowered vital resistance of the tissues is a prerequisite to the establishment of the disease. Common predisposition conditions are avitaminosis, malnutrition, blood dyscrasias, and disturbed metabolism. Cigarette smoking

greatly increases susceptibility, and, if persisted in, greatly retards recovery.

In favorable cases, oral and general hygienic measures alone have sufficed to restore the tissues to health and eradicate the organisms.

Treatment must be continued for several weeks after the subsidence of clinical symptoms as a prophylaxis against recurrent attacks.

Diamond Jubilee of Publication

Throughout 1994, the Journal of the Canadian Dental Association celebrates 60 years of publication as the authoritative "voice" of dentistry in Canada. Each month, in commemoration of its Diamond Jubilee, the Journal will reprint an article from Vol. 1, 1935.

This month, we reprint a column that was first introduced to the Journal in May 1935 — The Forum. Intended to provide snippets of interest-

ing information to Canadian dentists, in original material and through excerpts from other publications, The Forum was usually followed by a cartoon from Punch. It often looked at the lighter side of dentistry, adding an element of humour to the Journal. This edition of The Forum originally appeared in the October 1935 issue of the Journal. (We inadvertently published the November "60 Years" column last month.)


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CDA LIBRARY



LIBRARY PACKAGE FOR NOVEMBER

During the month of November, the CDA Library is offering the following two library packages to CDA members for \$5 each (plus applicable taxes):

- *Dental Anesthesia for the Pediatric Patient*
- *Behavior Management for the Pediatric Dental Patient*

For a complete list of all available packages, please contact the CDA library at 1-800-267-6354, ext. 223.

What can a MEDLINE search do for you?

Every day, the staff of the CDA Library respond to requests for information. Much of the ensuing research involves conducting literature searches using the MEDLINE database. This database contains references to thousands of articles published from 1966 to the present in both dental and medical journals. It is the most comprehensive research tool available. Most importantly, this CDA member service is **FREE!**

To help you understand how MEDLINE searches have assisted many dentists and their staff, here are some examples of the kinds of questions the library staff respond to:

- A community asked a dentist to consider the possibility of developing a mobile dental unit. With the help of a MEDLINE

literature search, articles were located that described the experiences of other communities with mobile dental units.

- In considering the use of dental implants in child patients, a dentist wanted a complete review of the literature on the diagnostic use and predictability of implants in this patient group before beginning treatment.
- A dentist who had two pregnant staff members wanted a general search on the potential occupational hazards to pregnant dental staff.
- Concerned parents approached a Vancouver dentist after they read an article on the possible negative effects of fluorides. Materials were gathered describing the dosage and

uses of fluorides, which both informed and relieved the patients' fears.

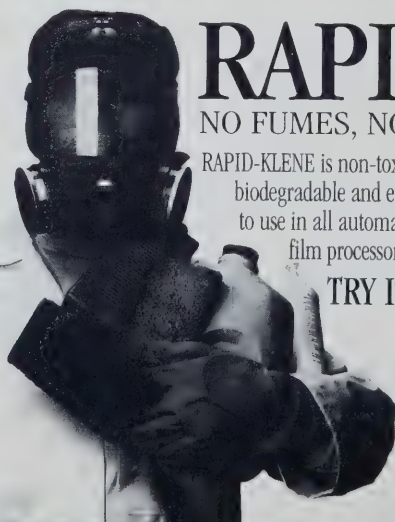
- An oral surgeon wanted all studies, not specifically dentally related, that reviewed postoperative pain control for HIV and AIDS patients.

These are but a few examples of the many requests that are successfully and quickly responded to by the CDA Library. If you are a CDA member and have a question concerning practice or patient management, give us a call. We are **your** library/resource centre.

To request a MEDLINE computer search, order this month's library package, or any other library service, dial 1-800-267-6354, extension 223.

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NEWS UPDATE

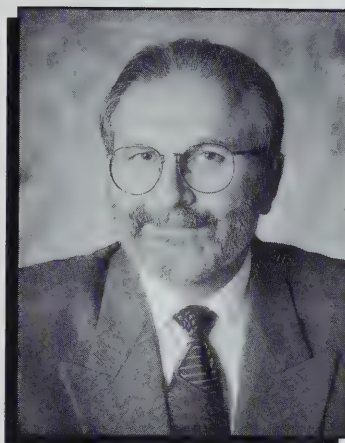
CAOMS Elects New President

Dr. Victor Moncarz of Wil-
lowdale, Ontario, has been elected
president of the Canadian Association
of Oral and Maxillofacial Sur-
geons (CAOMS).

After earning his DDS at the
University of Toronto in 1969, Dr.
Moncarz spent two years in general
practice before pursuing postgradu-
ate studies. He subsequently re-
ceived his diploma in oral and max-
illofacial surgery from U of T in
1973.

A fellow of the Royal College of
Dentists of Canada and a diplomate
of the American Board of Oral and
Maxillofacial Surgery, Dr. Moncarz
now maintains a private practice in
Toronto and holds a part-time
teaching position in U of T's dental
faculty.

Serving with Dr. Moncarz on the
1994/95 CAOMS executive are:
president-elect, Dr. S.P. Kucey,
Ottawa; immediate past-president,
Dr. P.I. Cyr, Halifax; secretary, Dr.
A.J. Camarda, Montreal; treasurer,
Dr. D.J. Vincelli, Calgary; executive
director, Dr. A.E. Swanson, Van-
couver. ■



Dr. Victor Moncarz

Canadian Academy Of Pediatric Dentistry Meets In Vancouver

The Canadian Academy of Pediatric Dentistry held its general as-
sembly and scientific session on Friday, October 7, 1994, in conjunc-
tion with the FDI World Dental Congress in Vancouver, B.C.

The scientific session led off with Dr. Kenneth Troutman, of Co-
lumbia University, New York, speaking on "Sedation in Pediatric
Dentistry." This was followed by a presentation on "Clinical Param-
eters for Office Sedation" by Dr. Carol Montgomery and Timothy Ober-
land of the British Columbia Children's Hospital. Regional reviews of
"Conscious Sedation Presently Used in Canada" were presented by
Drs. Ross Anderson, Atlantic Provinces; Murray Diner, Quebec, Clive
Friedman, Ontario; Felicity Hardwick, Manitoba, Bob Barsky, Alberta;
and Bill Croft, British Columbia. ■



The 1994-94 Canadian Academy of Pediatric Dentistry executive (l to r): Dr.
Murray Diner, Montreal, secretary/treasurer; Dr. Sam Cheung, Vancouver,
president-elect; Dr. Lawrence Yanover, St. Catharine's, Ont., president; and
Dr. Victor Legault, Montreal, immediate past-president. Dr. Peter Pronych
of Halifax (not present in the photo) was appointed as the academy's new
executive director.

Latex Allergy Symposium Held in Toronto

A latex allergy symposium was
held in Toronto September 19 in
conjunction with the Royal College
of Physicians and Surgeons of Can-
ada annual meeting.

Co-sponsored by the Canadian
Society of Allergy and Clinical Im-
munology, the Medical Devices
Bureau of Health Canada, and An-
sell Medical, the state-of-the-art
symposium attracted experts in the
field from Finland, France, the
United States, and Canada, who
spoke on the most recent research
in latex allergies, current clinical
techniques, product improvements
and occupational health issues.

Among the many exceptional
presenters were: Mr. A. Douglas, a
standards officer with the Medical
Devices Bureau of Health Canada;
Dr. K. Turjanmaa of Tampere Uni-
versity, Finland; Dr. J. Slater of
George Washington University,
Washington D.C.; Dr. D. Levy of
Hôpital Rothschild, Paris, France;
Dr. G. Sussman of the University of
Toronto (who was also the sympo-
sium organizer); Dr. D. Kelly of the
Medical College of Wisconsin; Dr.
J. Yunginger of Mayo Medical
School in Minnesota; and Dr. D.
Beezhof of Guthrie Research Insti-
tute, Pennsylvania.

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Latex allergy is particularly important in dentistry, where latex is used in surgical gloves, rubber dams and prophylaxis cups, among other products. Researchers believe that latex allergy is caused by a reaction to the proteins found in natural latex rubber. Approximately 57 of the 240 polypeptides contained in natural latex rubber have been shown to be allergenic.

In recent years, latex allergy has gained increased recognition due to the significant number of allergic responses, including anaphylactic reactions, that are being documented. Noted risk groups for latex allergies include people with spina bifida (the prevalence rate for this group is reported to be as high as 50 per cent) and those who are atopic. Health care workers are reported to have an incidence of five to 10 per cent, which, given the large size of this particular group, represents a prominent portion of society.

The use of non-latex surgical gloves is recommended as one way of reducing the potential risk for allergic reactions in those people with an identified allergy to natural latex rubber, and for those in high-risk groups. CDA's board of governors recently approved new guidelines on the use of latex-containing products in dentistry.

A strong structural homology between the proteins found in natural latex rubber and those found in a number of foods was reported. Specifically, banana, avocado, potato, chestnut, tomato, and kiwi were found to have proteins that may produce cross-allergenicity. This has diagnostic relevance, as a predisposition for latex allergy may be found in patients who report allergies to these foods.

The route of inducing an allergic reaction to latex may be cutaneous, mucosal, or airborne. Powdered gloves were found to increase the potential of inducing allergic reactions, as the powder, which is an aerosol, can carry the antigen. ■

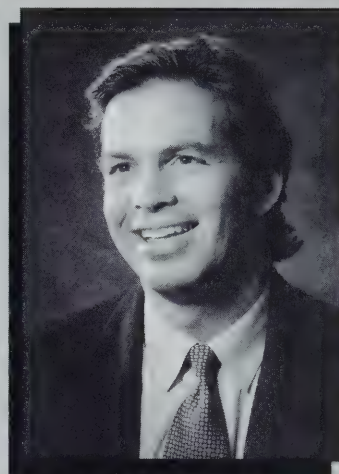
(Editor's Note: This report was provided by Dr. Daniel Haas of the department of anesthesia, faculty of dentistry, University of Toronto.)

Quebec Periodontists Elect New President

Dr. Lorne Wiseman of Montreal has been elected president of the Quebec Association of Periodontists for the 1994-95 term.

A 1985 graduate of the faculty of dentistry at McGill University, Dr. Wiseman went on to receive a diploma in periodontics from the University of Toronto in 1988.

Now in private practice in Montreal, Dr. Wiseman holds a teaching position in the faculty of dentistry at McGill University and is also associated with the multidisciplinary residency program at the Sir Mortimer B. Davis — Jewish General Hospital.



Dr. Lorne Wiseman

Serving with Dr. Wiseman on the 1994-95 executive are: Dr. René Guy Landry, Dr. Louis Drouin, Dr. Pierre Thibodeau and Dr. Roger Issa. ■

Canadian Dentists Receive Excellence in Dentistry Awards

The first-ever Excellence in Dentistry Awards, sponsored by Astra Pharma Inc. and *Dentist's Guide*, have been awarded to four dentists from across Canada.

Designed to recognize exceptional contributions by Canadian dentists, the 1994 excellence awards went to: Dr. Gordon Niki-foruk, a former dean of the faculty of dentistry, University of Toronto, and currently the professional relations manager for Colgate-Palmolive Canada, who won the Excellence in Preventive Dentistry Award; Dr. Robert Locke, who received the Excellence in Pain Management Award for a 40-year career devoted to dental anesthesia; Dr. Joseph McIvor of the Peace Arch Dental Group in White Rock, B.C., who won the Excellence in Community Service Award for his contributions to Peace Arch Community Services; and Montreal's Dr. Michael Wiseman, who received the Excellence in Childcare Award for his ongoing involvement with mentally and physically handicapped children. ■

Do You Know What Your Patients Are Taking?

In a press release launching its updated version of the *Compendium of Nonprescription Products*, the Canadian Pharmaceutical Association states that there are more than 17,000 over-the-counter medications on the market today, and that an ever-increasing number of patients are relying on nonprescription medication for self-treatment.

The *Compendium*, the only Canadian book of its kind, is a comprehensive, comparative reference text that takes the guess work out of determining what nonprescription drugs patients are taking. For example, despite what the name implies, Anacin 3 is not a stronger version of Anacin, a product containing acetylsalicylic acid, but an acetaminophen-only product.

The *Compendium of Nonprescription Products* is a companion to the well-known CPS — the *Compendium of Pharmaceuticals and Specialties* — and is available for \$49.95 from the Canadian Pharmaceutical Association, 1785 Alta

Vista Drive, Ottawa, ON K1G 3Y6, (613) 523-7877 or fax (613) 523-1445. ■

New Dental Organization Takes Shape In Ontario

Ontario's francophone dentists have formed a new organization to promote increased public access to French-language dental services.

Le Regroupement des dentistes francophone de l'Ontario also hopes to provide ongoing continuing education courses in French, and plans to hold a conference next spring to bring together francophone dentists from across Ontario.

During its founding meeting September 17, four dentists were named to the new group's executive: Drs. Alain Thivierge, president; Michel Brunet, vice-president; Léo Gaudet, secretary-treasurer; and

Richard Landriault (Northern region). Based on a survey conducted last April, Le Regroupement believes that there are approximately 540 francophone dentists now practising in Ontario. ■

The End of an Era — Military Dental Clinics Close in Europe

With the recent government decision to withdraw most Canadian troops stationed in Europe, 40 years of Canadian military and dental history in Europe has come to an end.

In the spring of 1993 and 1994, 35 Dental Unit and its remaining civilian and military dental clinics in both Baden-Soellingen and Lahr, Germany, were closed. Canadian military personnel and their families will remain at only two NATO clinics — Geilenkirchen in Germany and SHAPE in Casteau, Belgium.

Formed on April 29, 1953, 35

Field Dental Company initially provided dental support to 1 Air Division. Headquarters were located at Metz, France, and detachments were deployed at North Luffingham, England; Grostenquin, France; Zweibrücken and Baden-Soellingen, Germany. In 1957, Marville, France, replaced North Luffingham as a detachment base, and in 1967 the unit headquarters relocated to Lahr, Germany, with detachments based at Lahr, Baden-Soellingen and Zweibrücken.

Zweibrücken subsequently closed in 1969.

Canadian military and civilian dental clinics in Germany provided dental care to military personnel, their families and other civilians assigned to Europe. Over the years, hundreds of Canadian military and civilian dentists, dental assistants, receptionists, dental hygienists, laboratory technicians and dental equipment repair technicians served and practised in these dental facilities.

Report From Pakistan

Dr. Mahnaz Fatahzadeh, a 1993 graduate of the faculty of dentistry at the University of British Columbia, is on the road again.

In fact, Dr. Fatahzadeh is now practising dentistry in Pakistan, adding a new chapter to her remarkable story. It began when she moved to Vancouver from Iran, having found it impossible to achieve her educational objectives under the prevailing political conditions there.

During her career at dental school, Dr. Fatahzadeh represented UBC dental students on the CDA committee on student affairs and was committee chairperson in 1993. Prior to leaving for Pakistan, she completed a general practice residency program in Vancouver.

In letters to colleagues and friends in Canada, describing her experiences in Pakistan, Dr. Fatahzadeh said:

"I finally arrived in Peshawar, Pakistan. It was a very long trip with many stops along the way.



Dr. Mahnaz Fatahzadeh

The weather is very hot (40 C) and humid (70 per cent). People are hospitable and go out of their way to make my stay here more comfortable.

"I have started working at the clinic for Afghan refugees. The conditions are beyond description and even basic necessities for proper dental care are unavail-

able. Disposable needles are boiled in water to be used over and over again. Local anesthetics are in short supply and used only for extractions. Nevertheless, local dentists make do with the little that they have. I find it difficult to deliver less than optimal dental care, but I guess I will get used to it out of necessity. It is hard to believe, but patients often travel long distances and wait to be treated by the "Canadian doctor" who is expected to perform miracles in spite of the odds. I have developed a refresher course on modern dentistry for the local dentists. Although it is hard to sit still and concentrate in this heat and humidity, local doctors are interested enough to attend my lectures after the clinic hours.

"Although depressed at times, I am enjoying the work and learning about the less tangible but important facets of life. I truly hope to have made a little bit of difference by the time I leave here." ■

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Recently, the two remaining Canadian NATO bases at Lahr and Baden-Soellingen had a combined population exceeding 20,000. These bases were fully self-sufficient, and in many ways were like a "mini Canada" within the heart of Europe. Teachers were hired from Canada, base stores sold Canadian products, and major Canadian newspapers were available. There was even a Canadian television station, which broadcast the CBC National news via video cassette, albeit one day late.

At the official close-out ceremony, held in Lahr in May 1993, former commanding officers, other dental personnel and their spouses renewed acquaintances with 35 Dental Unit. A civilian dental clinic reunion was also held, with 10 alumni and their families returning to the Black Forest for the historic occasion. ■

A Toothbrush That Lights Up — What Next?

Bioware Inc. of Bala Cynwyd, Pennsylvania, has developed a toothbrush that lights up when users brush too hard.

Called the Alert, the brush was developed by Dr. Eric Spieler. Like all dentists, he was concerned about the damage caused by overzealous brushing. The Alert is the same size, weight and shape as a conventional toothbrush, but it incorporates a patented pressure sensor that lights up when the user brushes too hard. ■

Communication Co-ordinators Meet in Vancouver

Dentistry's national and provincial communications co-ordinators — the people responsible for "getting the message out" — met in Vancouver October 5, 1994, during the 82nd FDI World Dental Congress.

The day-long meeting, an annual event hosted by CDA, provides an opportunity for the communication co-ordinators to share

"What's It?"

This DeVilbiss atomizer came to the CDA Museum from a Winnipeg dental office as a leftover from "by-gone" days. The fine white powder in the atomizer resembles zinc oxide. Can any of our readers inform us in what

manner this atomizer and its possible contents might have been used?

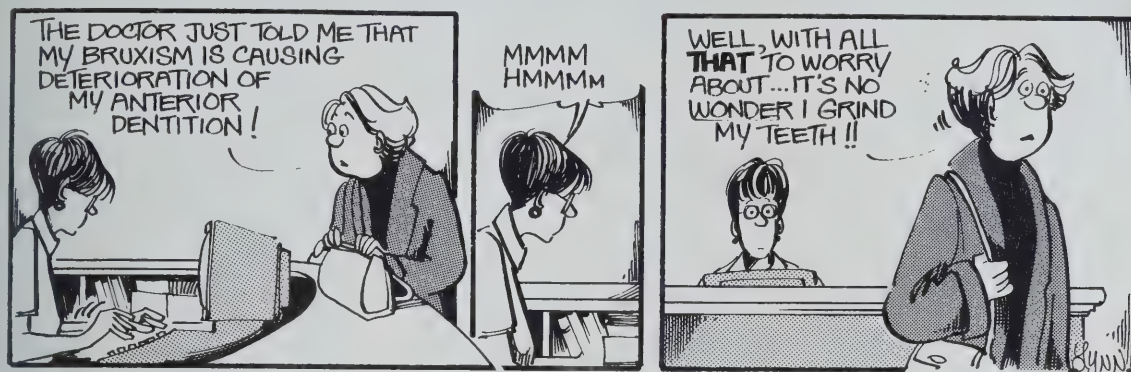
Send your answer to: Dr. P. Ralph Crawford, Editor, 1815 Alta Vista Drive, Ottawa ON K1G 3Y6.



National and provincial communications co-ordinators meet in Vancouver (front row, l to r): Dr. Bill Kettner, Manitoba Dental Association; Ms. Anita Casperson, College of Dental Surgeons of British Columbia; Ms. Linda Teteruck, CDA; Ms. Brenda Laing, Alberta Dental Association; Ms. Maxine Borowko, Canadian Dental Hygienists Association; Ms. Beverly Chene, CDA; Mme Suzanne Chartrand, Ordre des Dentistes du Quebec; Ms. Barbara Wishart, New Brunswick Dental Society. Back row (l to r): Dr. George Peacock, College of Dental Surgeons of Saskatchewan; Mr. Terence Davis, CDA; Dr. Lyn Stone, Alberta Dental Association; Mr. Paul Harris, Canadian Dental Service Plans Inc.; Mr. Peter James, Ontario Dental Association; Dr. Rob McGregor, Nova Scotia Dental Association; Dr. Jillian Page, Newfoundland Dental Association.

their experiences and ideas. Topics of discussion usually include dental awareness/dental health month,

media/public relations, membership marketing, publications, polling and product marketing. ■



Literacy and Health Are Linked

Poor Elly Patterson is leaving the dentist's office with anxiety and frustration. It's no wonder. Being told that bruxism is causing deterioration of your anterior dentition and then having a mumbled response from a receptionist would cause anyone to grind their teeth. How often does this happen in your office?

The Canadian Dental Association, in partnership with the Canadian Public Health Association and a group of other national health associations, is participating in an across Canada literacy and health program. The goals of the partnership are to increase awareness within the professions of the issue of literacy and the impact it may have on a client's health, and to promote the availability of materials in plain language to facilitate the process.

Thirty eight per cent of Canadians have low literacy skills. As such, they are at greater risk of being unhealthy, because they may not understand what you tell them and they may not be able to read the health information you give them. Tests have shown that patient compliance can increase by as much as 50 per cent if you speak and provide information in plain language.

Mrs. Patterson's bruxism problem would have been much better understood if someone had explained it in simple terms. Plain language information should:

- use lay language rather than technical jargon
- have short words and sentences
- cover only three to five points
- be in logical order, use techniques such as bold type to point out important ideas, and be illustrated with simple graphics
- focus on the patient's behavior rather than the philosophy of treatment

Follow these easy tips to help your patients remember what you told them:

- decide on the three to five most important points for the visit and stick to them
- ask your patients to repeat back instructions before they leave the office
- acknowledge your patient's feelings. It helps them listen and learn better
- plan with your patients what they can do
- do not substitute written information for personal teaching

(The *Journal* extends sincere thanks to Lynn Johnston, creator of *For Better or Worse*, for the cartoon she specially drew to enhance the Canadian Public Health Association's National Literacy and Health Program) ■

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BOOK REVIEWS

Pediatric Dentistry — Infancy Through Adolescence, 2nd edition

by J. R. Pinkham

W. B. Saunders Company, 1994
647 pages, black and white illustrations,
\$82; ISBN: 0-7216-4695-6

This 647 page hard-cover book is divided into four age-related sections and 42 chapters. No less than 31 different authors have dared to put together their knowledge in pediatric dentistry in order to update and expand the original 1988 edition (four all-new chapters).

Each target group — one to three year olds, three to six year olds, six to 12 year olds, and 12 to 18 year olds — is covered according to the changes the child experiences physically, cognitively, emotionally, and socially. The epidemiology of dental disease, examination requirements, prevention needs and possible treatment considerations, are all addressed for each group. There is a table of contents at the beginning and an index at the end of the book, a chapter outline precedes each chapter, and summaries appear after each section. Orientation throughout the book is easy, and pertinent information can be located quickly.

The authors warn the reader that because of the time required to produce this book (one-and-a-half years) and the ongoing evolution of materials, techniques and philosophies, some of the information delivered is already obsolete. Agreed. But, is that not the beauty of dentistry for children? Due to the dynamics of change incorporated in the subject, it is never boring, and like the children themselves, it never stands still!

However, some obsolescence could not pass unnoticed: one "deciduous" tooth, (p. 392), many "peg laterals" (p. 422, 519), one "distal shoe" (p. 363), and two entire chapters (26 and 27). Among the obsolete techniques and theories: "The smaller pediatric forceps are more easily concealed by the operator's hand . . ." (p. 387);

"Tongue thrusting should be considered a finding, and not a problem to be treated . . ." (p.387); and ". . . Resorption of roots owing to 'pressure' of erupting successors . . ." (p. 405).

Finally, it is unfortunate that the use of color was restricted to the cover — most of the intraoral photos, in chapters two, five and 12, for example, would have benefited from color.

Despite these observations, I believe this book remains the best and most practical chairside reference for the everyday pediatric dentist in general practice — this is not a specialists' book. Every student and undergraduate teacher should read it, and every dental office where children are cared for should keep a copy ready for consultation at all times.

Reviewed by:

J. Victor Legault, DDS, Cert. Pedo.
Pediatric dentist; President, Quebec
Federation of Dental Specialists

Color Atlas of Oral Diseases In Children and Adolescents

by Crispian Scully and Richard Welbury

Wolfe Publishing, Barcelona Spain, 1994
128 pages, color photographs, \$74.24;
ISBN: 0-7234-1945-0

This attractive hard-cover book presents 370 color photographs, 38 X-rays and 13 tables, a short preface, a table of contents and an index. It is divided into nine chapters, five of which (Chapters 1, 6, 7, 8, and 9) are very succinct, covering less than four pages each. The other four chapters constitute the bulk of the book, and picture congenital and/or acquired disorders. There is no innovative classification of the diseases, and the authors "have elected to arrange material alphabetically, within each of these sections."

The photographic quality is excellent, and only a few mistakes have slipped by unnoticed, e.g., on X-ray 160, the corresponding tooth

is found in 159, not 161, and 155 shows a permanent, not a primary dentition. The choice of words is sometimes imprecise, as exemplified on page 6, where "permanent molars appear 'behind' the primary ones," and not "distal" to them. Also on page 6, we are shown "permanent premolars," while on page 79, the text on oral candidosis is quite nebulous, (262-264), and "hairy leukoplakia . . . is a predictor of bad prognosis." The explanations accompanying the photographs are not always clear, and arrows pointing to the proper lesion would have facilitated its identification, since multiple lesions often appear in the same picture. Following the description of a disease, no treatment is usually presented.

The important chapter on child abuse, promised in the preface, turns out to be exactly six photos and a short text, altogether covering only two pages. Among the "diseases" described in the atlas, this reader was surprised to find a Carabelli cusp, dog bites, materia alba, racial pigmentation and a torus mandibularis, all in alphabetical order.

In summary, the title of this atlas promises much more than it delivers. A more precise and thorough color presentation would have been greatly appreciated by this reader, especially since the two previous books recently published in pediatric dentistry have failed to print a single color illustration.

Reviewed by:

J. Victor Legault, DDS, Cert. Pedo.
Pediatric dentist; President, Quebec
Federation of Dental Specialists

Dentistry for the Child and Adolescent, 6th edition

by Ralph E. McDonald and David R. Avery

Mosby-Year Book Inc., St. Louis, Missouri, 1994
\$77; ISBN: 0-8016-6705-4

These authors need no introduction in pediatric dentistry. The first

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edition of this book appeared in 1969 and was divided into 28 chapters with 600 illustrations, spread over 539 pages. No less than 14 contributors had joined their efforts to produce one of the best teaching books of that time.

Today, 25 years later, 36 contributors have written 31 chapters with 1,230 illustrations covering 914 pages. Six authors remain from the original group, contributing to 19 chapters all together, in this sixth edition. The format is unchanged: the table of contents and the index are the only means of orientation through this book, providing the reader knows what he or she is looking for. There are no summaries or keywords to introduce the chapters and offer some guidance.

I have gone through the pain of comparing this 1994 edition with the original, and I cannot believe that there has been so little change in pediatric dentistry during the past

25 years! Entire chapters have been reproduced almost identically, complete with the same illustrations. Thus, in 1994, pre-eruptive "caries" are still restored after surgical exposure (p. 131), the silicate cement still takes up half a page (p. 373), bruxism in children is still caused by nervousness (p. 776), and myofunctional therapy will correct swallowing habits (p. 782).

On the other hand, that important pathological condition known as ankylosis of the primary teeth barely receives 29 half-lines of attention (p. 527), and there is no warning of the particular vertical growth problems it creates in the maxillaries if not diagnosed and treated adequately.

Reading this latest edition carefully has convinced me that the authors have not significantly updated its scientific and clinical content, nor have they found the courage to delete data and techniques

that were once excellent but are now obsolete.

In my opinion, this book should not be recommended to undergraduate students or postdoctoral pediatric dentistry students. A good percentage of the information it contains is not relevant to the contemporary science and practice of pediatric dentistry. It retains, however, a certain historical value, and could be interesting for the nostalgic dentist who would like to reminisce about the "old days."

P.S. May I suggest an "expiration date" on scientific books to come? Past that date, such books would be classified as encyclopedias.

Reviewed by:

*J. Victor Legault, DDS, Cert. Pedo.
Pediatric dentist; President, Quebec
Federation of Dental Specialists*

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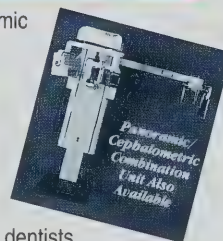
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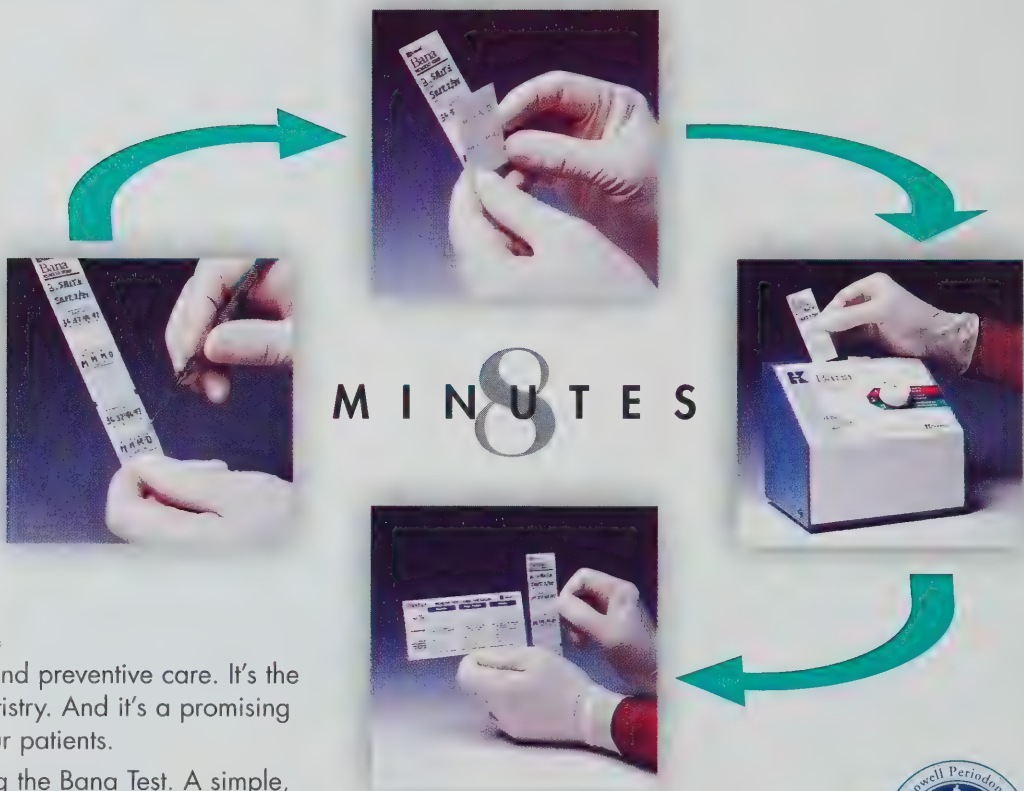


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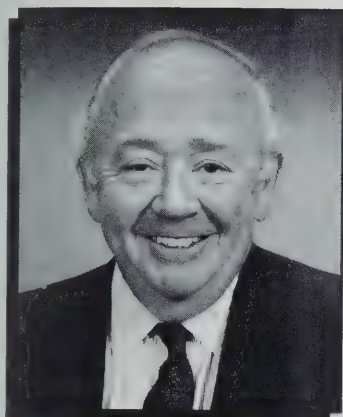
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Fellow Dentists — It's Time for Your Annual Checkup

Dr. Rod Moran

President of CDSPI

It has been said that the only thing certain in life is that nothing is certain in life. Things change — including dentists' insurance needs. Over the years, your insurance program will continually evolve. It's an evolution that happens one year at a time.

Accordingly, once a year, all dentists should re-examine their insurance programs. Many things can happen in 12 months — personally and professionally — that affect the way we provide for our financial security.

Toward the end of the calendar year is the perfect time for such a review. After all, our insurance usually comes up for renewal on a yearly basis. Also, by the end of the current year we know about any planned changes to the Canadian Dentists' Insurance Program (CDIP) plans that will take effect January 1. I'll inform you of those changes later on in this article.

In many cases, re-examining our insurance programs begins with looking for "triggers" — events in the past year that necessitate changes to our coverage. The top 10 things to consider during your annual checkup are:

Your Annual Insurance Review

1. Has your income level changed?

- If your income has increased, and your standard of living along with it, you may want to

increase your life insurance coverage so that — in the event of your untimely death — your family could maintain their standard of living.

- You should also consider increasing your long-term disability coverage to bring it in line with your annual income.

2. Have you had changes in your personal and family life?

- If you had or adopted a child this year, you should increase your life insurance and consider child coverage under dependents' life insurance.
- If you've purchased a home, vacation property or boat, consider taking out or increasing personal umbrella liability insurance to supplement your existing coverage.
- Consider increasing your life insurance to account for any new mortgage, loans or debts you have taken on.
- If you were married this year, take out life insurance if you haven't already done so, and consider accidental death and dismemberment insurance family coverage.
- Look into dependents' life insurance if your spouse started working this year, or increase coverage if your spouse's income has increased.

3. Have you had changes in your office overhead expenses?

- Office overhead expense insurance covers your ongoing office expenses should you become disabled, so you should increase your coverage if you've hired a new staff member, or had increases in rent or lease costs, salaries or any other office overhead expense this year.

4. Have you added to the value of your office contents?

- If you've made leasehold improvements, or purchased new equipment or furnishings, then increase your TripleGuard coverage if you haven't already done so. (TripleGuard coverage is based on the amount of office contents coverage you need.)

5. Has your patient load increased?

- You may want to increase your malpractice insurance coverage if your patient load has increased — the more patients, the greater the chance of being accused of malpractice (dentists in Ontario and Quebec must obtain malpractice insurance through their provincial licensing bodies).

6. Have you hired any new staff members?

- If you hired new staff this year and haven't yet informed them

of CDIP's dentists' staff insurance package, now's a good time — since the plan has just been enhanced (see details below regarding new dentists' staff insurance package coverage under "Changes to CDIP Plans for 1995"). You may also want to consider contributing to their premium as an employee benefit.

7. Which options should you add or drop?

- Consider adding the future insurance guarantee option to basic life, long-term disability and office overhead expense insurance. Should you ever suffer a medical condition that would normally prevent you from increasing coverage, this option would still allow you to increase coverage at specified times — for example, upon marriage, birth or adoption of a child, and at certain birthdays (25, 30, 35, 40, 45 and 50).
- Consider adding the own occupation option — which continues your benefits when you can't practise dentistry due to disability, but work in another occupation — to long-term disability and office overhead expense insurance.
- Also to long-term disability insurance, consider adding these options: cost of living adjustment, which increases your benefits as inflation increases; deferred income tax expense, which covers your tax liability if you run your practice on a deferred year-end and suffer a disability before your income tax is due; and retirement protection, which provides a monthly contribution to a special retirement account during a disability.
- Do you currently have equipment breakdown coverage? Under TripleGuard you can cover mechanical or electrical equipment for repair or replacement should it suddenly break down.
- If you're in your 50s or older, you can consider dropping the cost of living option, since its main advantage is for a long long-term disability. You could

also drop the own occupation option if you think there's little chance you'd start a new career at this point on suffering a disability.

8. Are you looking for ways to economize?

- You may be able to decrease your life insurance if a child or children are now self-supporting, or your mortgage and business loans are paid off — but keep in mind that other factors may dictate that you maintain your coverage level.
- If you have office overhead expense insurance, you can make sure all expenses that can decrease during a disability are covered under the reducing payment schedule, which has lower premiums than the constant payment schedule.
- You can choose longer elimination periods for long-term disability insurance and/or office overhead expense insurance if you're in a position to safely cover your cost of living/office overhead expenses for a longer period on suffering a disability. (Or you can purchase minimal coverage with a shorter elimination period and the rest with a longer elimination period.)
- For TripleGuard you can economize by choosing a higher deductible.

9. Are there any insurance plans you now have reason to choose, or coverages you want to increase?

- If you haven't been purchasing your maximum allowable amount of long-term disability insurance, consider purchasing the maximum this year.
- This is a good time of year to review your overall insurance program and look for gaps in coverage. Ask yourself if there are any CDIP plans in which you are not currently participating, and what the consequences would be if you experienced a loss in any of those areas. Call your CDSPI personal service representative to assist you.

10. Consider new plans in the marketplace and changes to existing plans.

- CDIP legal expense insurance was introduced in some participating provinces during 1994. If it's available in your province, consider the advantages of covering legal costs for a wide variety of legal actions involving you or your family, whether launching or defending an action.
- Please review changes to CDIP plans for 1995 listed below.

Changes to CDIP Plans for 1995

For the most part, plans in the Canadian Dentists' Insurance Program are unchanged. A few plans, however, have been enhanced significantly.

As of January 1, 1995, the dentists' staff insurance package will include another type of coverage designed specifically for new employees. For a low premium and with no evidence of insurability required, your new staff can receive basic levels of life, long-term disability and accident insurance. They can upgrade to full plan coverage at any time (which would replace their "entry level" plan) with evidence of insurability. CDSPI will provide you with plan details in the near future.

In 1995, TripleGuard will include data processing insurance under its office contents coverage. It covers repair or replacement of data processing equipment, software and data in your office in the case of theft, damage or mechanical breakdown, as well as any resulting lost income and extra expenses. CDIP's data processing insurance is still available as a separate plan for dentists not participating in TripleGuard.

If you participate in basic life, long-term disability or office overhead expense insurance, you are automatically eligible for a new benefit at *no extra cost* — the participants assistance program. The program provides confidential counselling to help you (and eligible family members) with problems affecting your family life, work life or general well-being. It's

exactly like an employee assistance program — a popular benefit some companies offer employees — but for the dental profession. You'll receive more details later if you participate in these plans.

Rate schedules for long-term disability and office overhead expense have been broken down into separate rates for males and females, following the industry standard. This change means a four per cent reduction for males compared with 1994 rates, and a 13 per cent increase for females.

There will be a two per cent premium increase in 1995 for CDIP's basic life insurance, and no premium increases for dependents' life insurance, accidental death and dismemberment insurance, personal umbrella liability insurance, data processing insurance or the dentist's staff insurance package. If purchased separately, office contents insurance premiums will increase by 17 per cent, and practice interruption insurance premiums by 20 per cent; TripleGuard premiums, however, will only increase by 10 per cent. Malpractice insurance premiums will increase by 22 to 25 per cent.

Also new for 1995 are two additional ways to make your CDIP premium payments: making annual or quarterly payments with a VISA credit card; and making monthly payments automatically through pre-authorized chequing (quarterly or annual payment by cheque will still continue). You'll receive information on these new options with your 1995 invoice.

There you have it: the top things to review in your insurance program and CDIP plan changes for 1995. Remember, any time you have a question about your coverage or any CDIP plan, feel free to make a toll-free call (1-800-561-9401 for service in English, 1-800-665-9401 for service in French) to a personal service representative at CDSPI. Our goal is not only to provide you with the best insurance program for dentists in Canada, but with the best possible service as well. ■



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Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	September 30, 1994	August 31, 1994	
Bond & Mortgage Fund	11.18766	11.15064	0.5%
Common Stock Fund	24.17030	24.00099	9.8%
Money Market Fund	68.30752	67.96798	4.7%
Balanced Fund	42.61423	42.95633	4.1%
Aggressive Fund	9.07547	8.87900	N/A

G.I.C. Fund

Term	September 30, 1994	August 31, 1994
1 yr	6.20%	6.55%
2 yr	7.15%	7.45%
3 yr	7.40%	7.80%
4 yr	7.65%	8.05%
5 yr	7.90%	8.20%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:
(includes RRIF assets)

September 30, 1994	August 31, 1994
\$190,391,835.00	\$192,044,619.00

For further information:



CDSPI

Write:

CDSPI

Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

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1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

JOURNAL

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Neutropenia In Childhood With Oral Manifestation — A Case Report

W.S. Cheung, BA, DDS, FRCD(C)

ABSTRACT

Neutropenia is an unusual condition of blood dyscrasia in which the count of circulating neutrophils falls below the normal level. Neutrophil plays an important role in the host defense mechanism. The common clinical manifestations of neutropenia include ulcerative and inflammatory lesions in the oral cavity. A case of neutropenia of a seven-year-old girl is reported.

SOMMAIRE

La neutropénie est un trouble peu commun de la crase sanguine procédant d'une diminution sous la normale des polynucléaires neutrophiles qui circulent dans le sang. Or les polynucléaires neutrophiles jouent un rôle important dans le mécanisme de défense d'un sujet. Dans les cas de neutropénie, les manifestations buccales les plus communes sont des lésions ulcérées et inflammatoires. Dans cet article, on décrit le cas d'une fillette de sept ans atteinte de neutropénie.

Introduction

Neutropenia is a blood dyscrasia in which there is a reduction of the circulating neutrophils, or polymorphonuclear leucocytes (PMNs). In

healthy individuals, the total neutrophil count ranges between 1.8 GL kc/L and 7.2 GL kc/L. The normal range in the black population is slightly lower. Certain blacks may have values as low as 1.2 GL kc/L to 1.5 GL kc/L, with no detectable disease processes.¹

Different names have been suggested to describe the various types of neutropenia. For example, the names commonly used to describe childhood neutropenia include cyclic neutropenia, chronic benign neutropenia, chronic idiopathic neutropenia, drug-induced neutropenia, congenital neutropenia, chronic familial neutropenia and immune neutropenia.¹⁻¹⁹

Cyclic neutropenia usually affects children. In these cases, the patient's neutrophil counts fall significantly in a fairly regular cycle of 21-day periodicity.⁴⁻⁷ Chronic benign neutropenia is a non-hereditary, self-limiting condition.¹⁰ Chronic idiopathic neutropenia is a persistent disorder without an apparent cause, but is not a self-limiting condition.¹² Drug-induced neutropenia is a condition caused by ingestion of certain drugs or chemicals.^{1,2,17-19} It sometimes causes agranulocytosis, a state in which all the circulating neutrophil is virtually absent. Congenital neutropenia usually presents as severe neutropenia in the first few months after birth.⁹ Familial benign chronic neutropenia is a chronic condition with a hereditary pattern.^{15,16} Immune neutropenia usually devel-

ops in conjunction with conditions known to have an auto-immune basis, such as systemic lupus erythematosus and rheumatoid arthritis and other connective tissue diseases.¹⁻³

The clinical manifestations of neutropenia include chronic or acute infections. Recurrent conditions such as otitis media and upper respiratory tract infections are very common. Occasionally, a severe persistent neutropenia condition can even lead to a fatal infection. Oral manifestations can include oral moniliasis, ulcerations, chronic gingivitis, gingival hypertrophy, loss of alveolar bone, and excessive tooth mobility.²

Case Report

A Caucasian female, seven years and nine months old, was referred by her family dentist for evaluation of a persistent non-painful red lesion on the labial gingiva of her maxillary permanent central incisor. Her parents had been aware of the lesion for at least two months. The patient had been seen previously by the family physician, who suggested that she should attend a dentist for further consultation.

The patient, an apparent healthy young female, appeared to be well nourished, well developed, and in no distress. She presented with a distinct crimson lesion of about 4.0 x 4.0 mm on the labial gingiva of her maxillary left central permanent incisor (Fig. 1). The patient



Fig. 1: A distinct crimson lesion on the labial gingiva of the maxillary left central incisor.

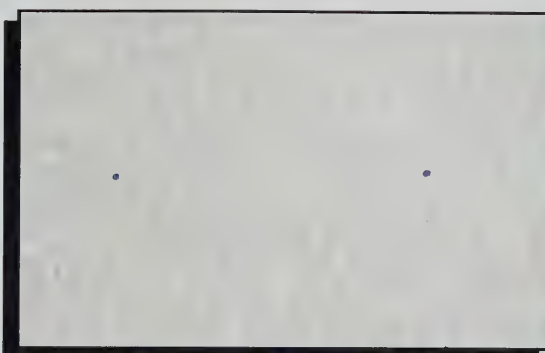


Fig. 2: Blood film from the patient showing a paucity of WBC, particularly the neutrophil (x600).

was in her early mixed dentition. Her oral hygiene was acceptable. Except for the lesion, the rest of her periodontal and dental conditions were within normal limits. No unusual findings were noted radiographically.

The patient's medical history was non-contributory. She was the oldest child in the family and had three younger sisters. Both the parents and the sisters were in good health.

A blood dyscrasia was suspected and a complete hematological examination was ordered. The result showed very low WBC and neutrophil counts. The patient's hemoglobin and platelets were within normal limits. Her physician was informed of the laboratory result. A series of blood tests were performed over the following few months (Table I). In one of the blood tests, the neutrophils were almost completely absent (Fig. 2). A diagnosis of neutropenia was suggested.

Worried that the patient's oral lesion could be more than just inflamed gingiva, her family physician asked to have a biopsy done. A small piece of marginal gingival tissue about the size of 3.0 x 1.0 x 1.0 mm was removed from the inflamed area for pathological examination. Microscopic examination revealed that the epithelium of the specimen was somewhat edematous and was subtended by loose fibrovascular tissue containing acute and chronic inflammation, consistent with marginal gingivitis.

The family physician ultimately referred the patient to a pediatrician for further evaluation. Further laboratory tests were performed. Direct Coombs' and anti-nuclear antibodies (ANA) were negative. Serum IgA, IgM, and IgG were normal. Tests for neutrophil antibodies were negative. A bone marrow examination was reported to be consistent with neutropenia. After several months' investigation, a

diagnosis of neutropenia was confirmed, but no etiology was identified. Since the patient had not experienced any infections other than the oral lesion, no treatment was suggested. The patient's parents were asked to report any suspicious infection or illness to the family physician immediately.

The patient was instructed to practice meticulous oral hygiene under the supervision of her parents. She was referred back to her family dentist who was advised about the neutropenia condition. Special attention in monitoring her periodontal condition was suggested.

The parents and the family dentist noted that the oral lesion persisted for about two years from the time it first appeared. It then gradually resolved and was hardly noticeable in about three years time. The patient's overall periodontal and dental conditions did not deteriorate at all during this period. Her general health was in good order,

Table I

Results Of the Series Of Laboratory Tests Of WBC and the Differentials

Day	WBC	Neutro	Lymph	Mon	Eos	Baso	
1	4.7	2.1	1.8	0.8	**	**	GLkc/L
7	3.1*	0.3*	2.4	0.2	0.1	0.1	GLkc/L
14	4.9	2.0	2.3	0.6	**	**	GLkc/L
21	4.7	1.8	2.4	0.5	**	**	GLkc/L
28	2.6*	**	2.4	0.1	0.1	0.1	GLkc/L
43	2.7*	0.3*	2.0	0.3	**	0.1	GLkc/L
117	3.3*	0.9*	1.9	0.4	0.1	0.1	GLkc/L

* Below normal value

** negligible



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free of any infections and illnesses. A blood test was suggested at that time to see if the neutropenic condition still existed. However, the parents declined the suggestion. They felt there was not enough justification to subject her to more tests since she was very healthy in every way, clinically, and her oral lesion had disappeared completely. Her family physician appeared to concur with them.

Discussion

The most intriguing feature of the present case was that the patient never experienced any persistent or recurrent infections other than the localized gingival inflammation, which persisted for about two years. The patient appeared to be healthy in every other way, even during the time that her neutrophils were almost completely absent and her hematological results did not show any compensatory increase in monocytes nor lymphocytes.

Many cases of cyclic neutropenia in children have been reported in the literature. In the present case, the neutrophil counts fluctuated from week to week over the period of investigation. The pattern of fluctuation does not appear to be the same as that of typical cyclic neutropenia, which usually shows a periodic (21-day intervals) decrease in circulating neutrophils.

The patient did not appear to have immune neutropenia since her Direct Coombs' Test and anti-nuclear antibodies (ANA) were negative, and her IgG, IgA and IgM were also within normal limits.¹ No apparent family history of neutropenia was noted in the present case, although no hematological investigations were made of her family members.

The patient is more likely to have chronic benign neutropenia, or a variant of this condition. Chronic benign neutropenia, a non-hereditary condition, generally runs a self-limiting course. Unfortunately, in this case no hematological report was available after the oral lesion disappeared.

Neutropenia can also be caused by ingestion of certain drugs or chemicals as etiologic agents. In the present case, no known causative agent was identified. However,

it is difficult to exclude the possibility that certain contaminants in the water or food, or even pollutants in the air, could have acted as causative agents, leading to the so-called drug-induced neutropenia.

As illustrated in the present case, neutropenia can be an insidious condition that can clinically manifest solely in the oral cavity. It is important for practising dentists to be cognizant about this rare blood dyscrasia. ■

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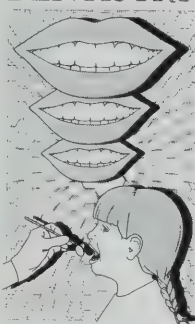
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A One-Year Statistical Analysis Of Dental Emergencies In A Pediatric Hospital

Stephane Schwartz, DDS, M.Sc.

ABSTRACT

Data on 1,373 emergency dental visits to a pediatric hospital during a calendar year period were reviewed. Chief complaints were categorized and the associated pathological conditions were identified and analyzed. A classification of pediatric dental emergencies is presented.

Key Words: dental emergencies, pediatric hospital.

SOMMAIRE

Au cours d'une année civile, on a étudié 1 373 visites dentaires d'urgence dans un hôpital pour enfants, classant les principaux sujets de plainte, déterminant et analysant les états pathologiques qui y sont reliés. Dans cet article, on présente une classification des urgences dentaires pédiatriques.

Introduction

During infancy, childhood and adolescence, children are constantly changing. As children grow, they undergo physical (including craniofacial and dental) changes as well as cognitive, social and emotional changes.¹ Dental problems encountered in the pediatric popu-

lation are unique and specific to this age group. The emergence of the primary dentition, the dentition exchange and the eruption of the permanent teeth, particularly when linked with other parameters such as facial growth, sensory motor development and emotional change, demand a different level of comprehension and response from the clinician than is necessary for the adult patient. As such, it is possible to understand the great variety of causes for emergency dental visits among the pediatric population, and the need for a classification system developed in a comprehensive and orderly manner.

Material and Methods

Data on 1,373 well-documented cases was collected from January 1, 1992, to December 31, 1992. Patients ranged in age from seven days to 17 years. Six hundred and ten girls and 751 boys were included in this study. One thousand one hundred and forty-four patients were treated during regular work hours and 229 presented during non-working hours. The time at which patients presented and the reason for their visit were computed. In addition, the dental history of each patient was recorded as well as the results of his or her examination.

The problems that prompted each patient's visit were assigned

to seven main categories, which were further divided into several subdivisions.

I) Dental Pain (n = 728)

- 1 Caused by dental caries (317)
- 2 Caused by dental caries and complicated by infection with or without swelling (213)
- 3 Associated with previous operative procedure with or without infection (78)
- 4 Associated with previous endodontics with or without infection (22)
- 5 Associated with previous oral surgery with or without infection (18)
- 6 Not associated with dental caries (80)

II) Traumatic Injuries and Complications Of Traumatic Injuries (n = 403)

- 1 Traumatic injuries (361)
- 2 Complications of traumatic injuries (42)

III) Pain Associated With Third Molars Or TMJ Dysfunctions (n = 8)

IV) Pain Caused By Orthodontic Appliances (n = 48)

V) Soft Tissue Pain With Or Without Infection (n = 79)

- 1 Pericoronitis
- 2 Gingivitis
- 3 Herpetic lesions

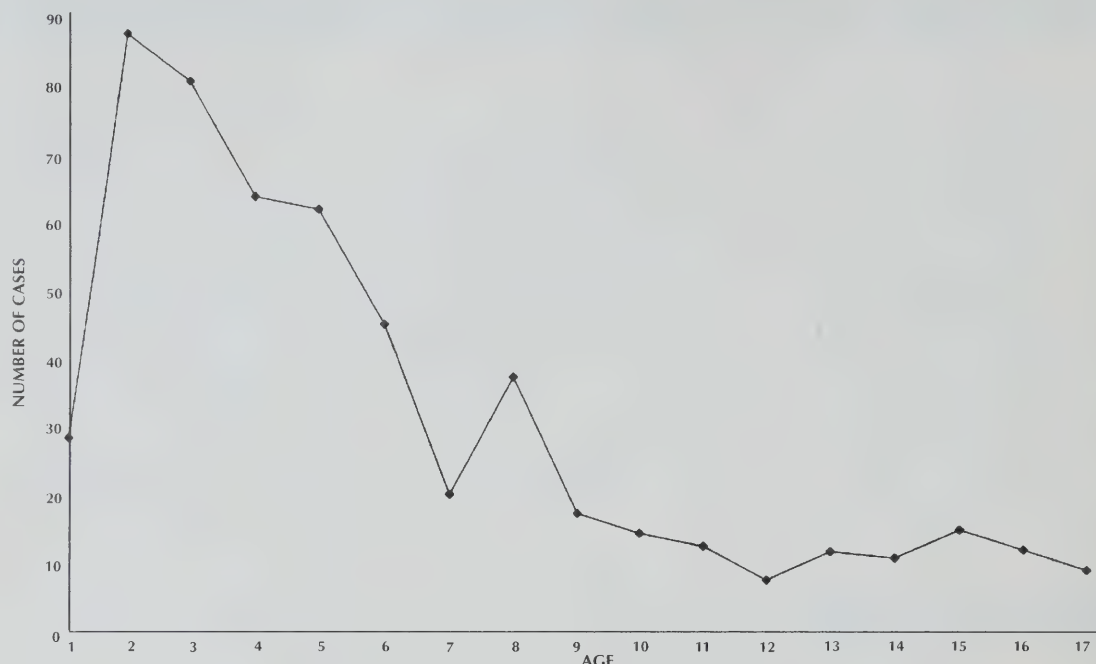


Fig. 1: Emergency visits prompted by dental caries/infections tabulated by age. $n = 530$

- 4 Ulcerative lesions other than herpetic lesions
- 5 Others

VI) Oral and Facial Swelling Without Dental Origin ($n = 18$)

VII) Complaints With No Specific Pathological Findings Or Demands For Consultation ($n = 89$)

Results

Dental pain caused by dental caries (38.5 per cent) and traumatic injuries and their sequelae (29.5 per cent) constituted most of the causes for emergency visits, and thus deserve a more detailed description. The remaining 32 per cent of causes will be briefly outlined.

1. Dental Pain

- 1 Dental pain caused by dental caries $n = 317$

Children in this group presented with pain caused by carious lesions that had not been previously treated. Pain and/or refusal to eat were the only complaints. Clinical examination did not reveal fistulae or swellings. Radiographic

radiolucencies were not observed. Of the 317 children (138 female and 179 male), 222 (70 per cent) were between one and five years of age and 168 (53 per cent) between two and four years of age. Twenty-one (6.6 per cent) were seen during non-working hours, and nine (2.8 per cent) were visited in the hospital wards following a request for consultation by a concerned medical staff member.

- 2 Dental pain caused by tooth decay and complicated by infection with or without swelling $n = 213$

These children presented to the clinic with infected carious teeth that had not been previously treated. Of the 213 children (96 female and 117 male), 27 (12.7 per cent) were seen during non-working hours. One hundred and fifty-five (73 per cent) were between the ages of two and eight years. Clinical and/or radiographic examinations revealed pain, fistulae and/or radiolucencies. Swelling was frequent. Sixteen

children (8.5 per cent) were hospitalized for treatment of the swelling caused by dental infection. The ages of the admitted children were from three to 17 years, with a peak from four to nine years (68.5 per cent). Hospital admissions were prompted by periorbital or submandibular swelling that could compromise the patient's airway. Fig. 1 shows the distribution by age of the emergency visits prompted by dental pain/infections due to carious lesions ($n = 530$).

- 3 Dental pain associated with previous operative procedures with or without infection $n = 78$

These children presented with painful restored teeth. No attempt was made to establish the time span between treatment and the emergency visit. Of the 78 children (42 female and 36 male), 51 (65 per cent) were between the ages of three to seven, and four (five per cent) presented during non-working hours. They were divided into five groups:

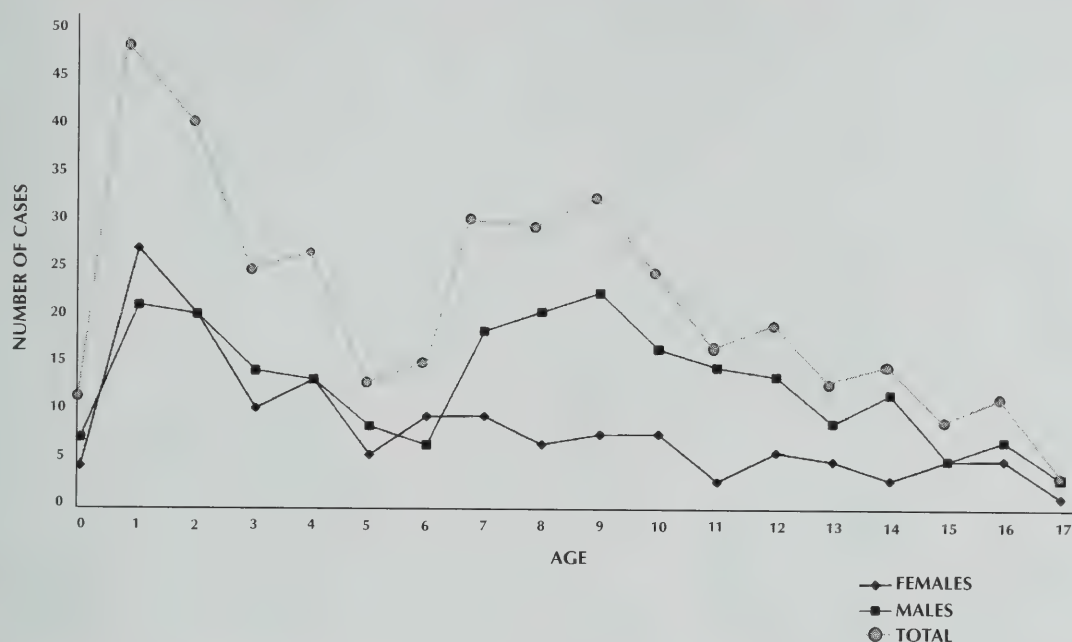


Fig. 2: Traumatic injuries by age and sex.

i. Postoperative sensitivity (six patients)

ii. Total loss of restoration (27 patients).

Most of the restoration loss was seen in primary teeth, and 24 of the 27 patients were 10 years old or younger.

iii. Broken restorations (22 patients).

Broken restorations occurred primarily in primary molars and primary anteriors. All patients were seven years old or younger. Ten of the teeth were abscessed, and one four-year-old girl had to be hospitalized because of periorbital swelling caused by an infected maxillary first primary molar.

iv. Complaints where restorations were intact (13 patients).

Two permanent teeth and one primary molar were diagnosed with pulpitis, whereas the remaining 10 teeth (seven primary molars and three primary incisors) were infected. All children were between four and seven years of age.

v. Recurrent caries (10 patients).

These patients were all three to seven year olds who had painful teeth caused by recurrent caries under previous restorations. Only primary teeth were involved.

4 Dental pain associated with previous endodontics n = 22

Half of this group, aged eight to 17 years, had acute symptoms following the endodontic treatment of a permanent tooth. The other half, aged five to 10 years, presented with painful abscesses following the pulpotomy of a primary molar or incisor. The pulpotomies had been done four months to four years prior to the emergency appointment.

5 Complications of oral surgery n = 18

Eighteen patients were seen following an extraction, periodontal surgery or the removal of a growth. Excessive bleeding (four), postoperative infections (three), pain and/or swelling (seven), and broken periodontal packs, loose sutures or loose teeth (four) were recorded as the chief complaints.

6 Dental pain not associated with tooth decay n = 80

Seventy-three patients in this large group consisted of children aged five to 12 years experiencing pain associated with loose exfoliating teeth. Six children complained of sensitive permanent hypoplastic incisors or painful primary teeth showing severe attrition. The remaining case was a baby who had a very mobile neonatal tooth, which seemed to interfere with her drinking.

II. Traumatic Injuries and Complications Of Traumatic Injuries (n = 403)

1 Traumatic injuries

Three hundred and sixty-one patients (223 boys and 138 girls) with traumatic injuries came to the emergency clinic. Of these, 141 (96 boys and 45 girls) were seen during non-working hours (Fig. 2). Fifteen patients were examined and treated on hospital wards, as they had sustained other traumatic injuries, mostly caused by moving vehicle accidents (MVA). The remaining injuries resulted from bicycle acci-

Number of cases

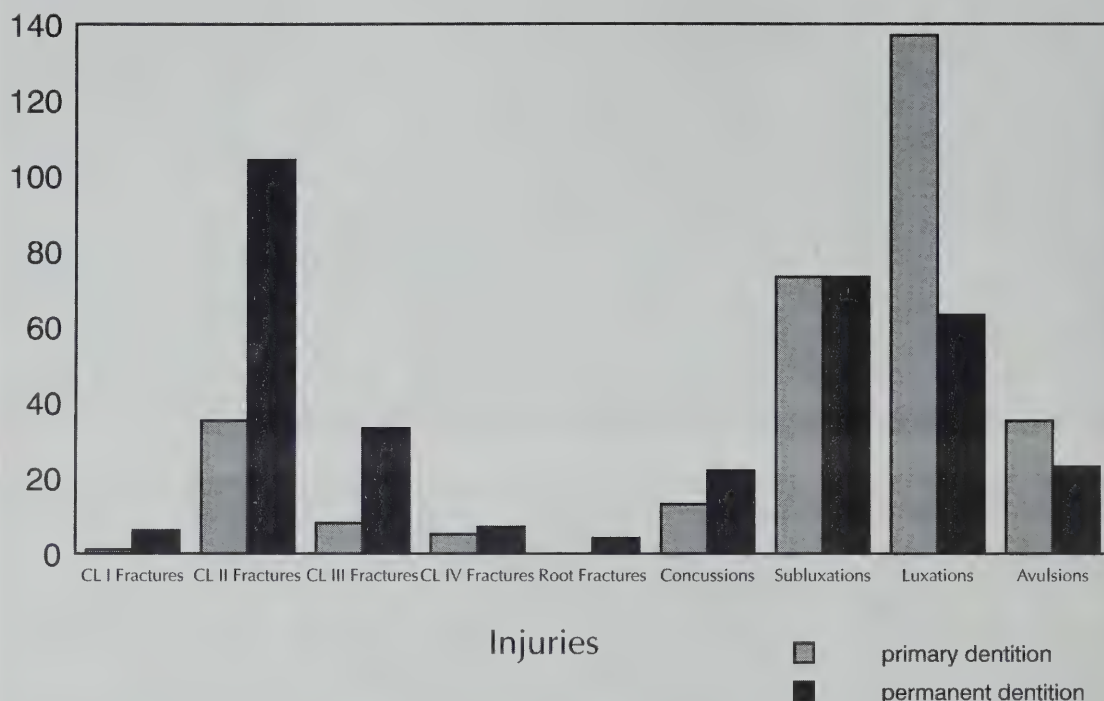


Fig. 3: Types of traumatic injuries in the primary and permanent dentition.

dents, assaults and even dental trauma sustained during hospitalization. Sports accidents occurring in gymnastics and non-organized contact sports were also a cause of these types of injuries. The traumatic injury cases observed in this study follow the same curve of incidence seen in the other reports.² Of note, the curve for boys between seven and 12 years of age shows a sharp deviation, showing the increased incidence of traumatic injuries specific to this group.

Fig. 2 shows the distribution of the 361 traumatic injury patients by age and sex. In all, 631 teeth were involved, an average of 1.75 injured teeth per patient. Three hundred thirty-one teeth belonged to the permanent dentition and 300 to the primary dentition. In the permanent dentition, eight teeth had sustained an enamel fracture, 112 an enamel and

dentin fracture, and 33 a coronal fracture through the pulp chamber. When roots were involved, five teeth showed an oblique fracture through the crown and root, and three teeth had root fractures. When the supporting tissues were involved in the permanent dentition, there were 22 concussions, 72 subluxations, 63 luxations, and 23 avulsions. When teeth were fractured as well as subluxated, luxated or avulsed, they were classified only as "supporting tissue trauma" in order to avoid duplication of data. The maxillary centrals were involved in 72.5 per cent of the cases, the maxillary laterals in 12.5 per cent, the mandibular centrals in 9.5 per cent, the mandibular laterals in 4.5 per cent, and other teeth in one per cent of the cases reported.

In the primary dentition, the dental fractures were distrib-

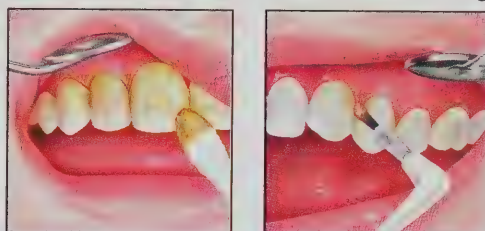
uted as follows: one tooth was fractured through the enamel, 34 teeth were fractured through the enamel and dentin, seven teeth were fractured through the coronal pulp chamber, and four teeth were fractured through the enamel, dentin, pulp and root. (Two teeth sustained a root fracture, but since they were luxated as well, they were classified as luxated only.)

Where the supporting tissue was involved in the primary dentition, 12 teeth suffered concussion, 72 teeth were subluxated, 137 teeth were luxated, and 33 teeth were avulsed. The maxillary centrals were involved in 68.5 per cent of the cases, maxillary laterals in 19.5 per cent, mandibular centrals in 6.5 per cent, mandibular laterals in 1.5 per cent, and other teeth in four per cent. Interestingly, 39 of the 137 luxated primary teeth (28.5 per cent) were intruded in chil-

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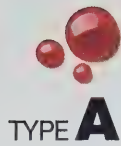
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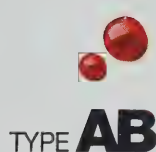


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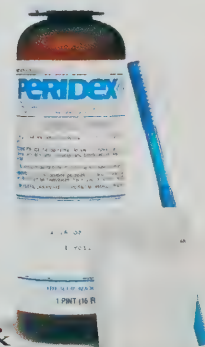
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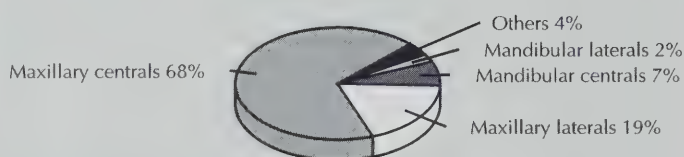


Fig. 4: Teeth involved in traumatic injuries in the primary and permanent dentition.

dren who were four years old or younger, while in the permanent dentition of children aged seven, eight and nine, seven of the 63 luxated teeth (11 per cent) were intruded.

Fig. 3 shows the types of traumatic injuries that can occur in the primary and the permanent dentition. Fig. 4 shows the percentage of teeth in the primary and permanent dentitions involved in these types of injuries.

2 Complications of trauma

Forty-two children presented who had sustained a traumatic injury previously and now had

pain and/or infection. Two patients, who had been hospitalized for weeks with severe injuries, were on ward and required emergency dental extractions. One 12-year-old handicapped girl was admitted with an infection following a dental reimplantation. Altogether, nine permanent teeth became abscessed months to years after undergoing initial treatment of a traumatic injury, and 25 primary teeth were abscessed, painful or had turned dark in the weeks to months following an injury. Most of the primary tooth abscesses followed intrusive luxations. A to-

tal of 18 patients had abscesses. The remaining patients made an emergency visit because of broken or detached splints.

III. Pain Associated With Third Molars Or TMJ Dysfunction (n = 8)

Five adolescents, aged 14 to 17 years, experienced pain associated with the eruption of third molars. Swelling was an accompanying symptom in two cases. TMJ pain was the main complaint of three patients, all boys, aged 13, 14 and 15.

IV. Pain Associated With Orthodontic Appliances n = 48

These patients, aged seven to 17 years, consisted of 25 girls and 23 boys. Forty-two were regular clinic patients and the remaining six were from private offices. Their pain was caused by loose orthodontic bands, broken wires, and orthodontic appliances impinging on soft tissue.

V. Soft Tissue Pain with Or Without Infection n = 67

1 Pericoronitis n = 17

There were 13 girls and four boys, all between five and 17 years of age. Five mandibular first molars, nine mandibular second molars, one mandibular third molar, and three maxillary second molars were involved.

2 Gingivitis n = 19

There were nine girls and 10 boys. In the teenage group, the pathology was caused by poor oral hygiene and the presence of calculus. In the younger group, gingivitis was caused by local food impaction or by underlying systemic diseases that reflected poor gingival status. The systemic diseases included aplastic anemia, cyclic neutropenia, immuno-proliferative disorder, cryptosporichosis, and mastocytosis.

3 Herpetic lesions n = 14

There were seven girls and seven boys, aged one to eight years. The usual complaints were irritability and refusal to eat.

4 Ulcerative lesions other than herpetic lesions n = 14

There were seven girls and seven boys, aged two to 13 years. These ulcerative lesions were usually single. The oldest patient, a 13-year-old boy, had repetitive multiple and large lesions and was diagnosed as having RAU (recurrent aphthous ulcerative lesions).

5 "Others" n = 13

There were six girls and seven boys, aged one to 17 years, with three periodontal abscesses, three gingival abrasions or recession, four drug-induced gingival hyperplasia, two gingival lesions caused by medication and/or deficiency in the immune system, and one case of a gingival lesion related to a childhood disease (chicken pox).

VI. Oral and Facial Swelling Not Caused By Tooth Decay n = 18

There were 10 girls and eight boys in this group, aged seven days to 15 years. Nine children presented with swelling of a developmental origin — six simple eruption cysts, one large dentigerous cyst, one peripheral giant cell granuloma, one ulcerated hemangioma of the upper lip, and one swelling of the left cheek caused by a blockage of a salivary gland. The remaining eight children had been hospitalized for facial swelling and had been sent to the department of dentistry to rule out a dental pathology. In seven of these cases, the examination of their dentition and oral tissue was noncontributory. The eighth patient, a one-year-old girl, had a periorbital swelling associated with a swelling of the right tuberosity that was caused by the metastasis of a neuroblastoma of the kidney.

VII. Complaints With No Specific Pathological Findings Or Demands

For A Consultation n = 89

In a hospital setting, dental clinicians usually go to the wards themselves when a treating physician expresses concern about the oral

health of a patient. Sometimes the physician sends ambulatory patients directly to the dental clinic. Demands for consultation made by physicians, as well as those made by the patients themselves (or by their parents) when they "drop by" at the dental clinic, must be honored without delay. These patient visits constituted the majority of the 89 "emergencies." The only common feature among these patients was that they were not in pain, or if they were, the symptoms were vague and clinical examination was noncontributory. Most of the complaints were due to ectopic eruption of permanent teeth, malocclusions, gingival hyperplasia, moderate carious lesions, possible pain caused by sinusitis and enamel defects. Many of these patients were handicapped.

Comments

With 1,373 emergency visits during a full calendar year, there was an average of 3.76 consultations per day. This emphasizes the need for communities to have well organized residency hospital clinics. The words well organized, residency, and hospital are important. Well organized, because these emergency visits must be handled on a daily basis without disturbing the normal activity of the clinic. Residency, because in 1992, 229 of these visits (16.7 per cent) were made during non-working hours, and the residents on call made this service possible. Hospital, because, of the 291 infection cases where immediate intervention was imperative, 19 patients needed hospitalization. This facility is difficult to obtain through a private office.

It is well-known that traumatic injuries often happen at night and on weekends. This survey confirms this fact, with 39 per cent of these patients, or 141 of the total number of 361 trauma cases, presenting during non-working hours.

Discussion

A review of the patients who presented with traumatic injuries shows two elevated curves, the first at ages one to four years and the second at ages seven to 10 years (Fig. 1). The first crest of cases cor-

responds to the babies and toddlers who hurt themselves because they do not yet have a developed sense of fear, their balance is not that good, and their neuromuscular reflexes are not completely developed. There was no marked difference between females and males. The second crest was caused by males, aged from seven to 10 years. Boys at this age are more active and more involved in physical contact sports than girls. The ratio of males to females was 223 to 138, or 1.6, which is not inconsistent with what is described in the literature.² What is remarkable, however, is the type of injuries sustained by the different dentitions (Fig. 2). The ratio of Class II and Class III coronal fractures in the permanent dentition (101 and 33) to those in the primary dentition (34 and seven) is 3:1 and 4.7:1, respectively. This ratio is reversed for luxations in the primary dentition (137) to luxations in the permanent dentition (63), at 2.2:1. This shows again that, because of the plasticity of the young alveolar bone in the primary dentition, a traumatized primary tooth will have a tendency to move, while a permanent tooth, given the same trauma, will tend to fracture.

Most of the children who presented with pain caused by orthodontic appliances belonged to a large group of cleft lip/palate patients who are regularly treated at the clinic for their orthodontic needs. This explains the unusually high number of visits for this type of emergency.

The visits prompted by pain following pulp therapy on a primary tooth should remind the clinician that not all pulpotomies or pulpectomies are successful, and that such treated teeth require periodic radiographic verification. Ten of the 11 children presented with significant swelling and discomfort at an average of 22 months following therapy. In most of these cases, there would have been adequate time for an earlier diagnosis. When permanent teeth were involved, the acute symptoms had occurred during endodontic treatment, not after the completion of the treatment.

The emergency visits related to gingival and oral mucosa pathology offer a panorama of the usual problems encountered by these patients. Thirty children, or 38 per cent of the 79 patients in this group, suffered from the well-known herpetic and other ulcerative lesions. All were young, although those with herpetic were the youngest.

The second highest class of soft-tissue lesions were the result of gingivitis. They tended to be found in the older group and were related to poor oral hygiene, reflecting a lack of home care. When generalized gingivitis did occur in the younger group, aged one to six, it was invariably concomitant with a severe handicap or an underlying systemic disease.

Pericoronitis does not occur exclusively in the gingival tissue surrounding third molars. This survey shows that it can also affect mandibular first or second permanent molars. Maxillary molars were rarely involved. Gingival problems associated with the sequelae of bone marrow transplants, or with the intake of various drugs, are often seen in a hospital clinic. They should be recognized and receive appropriate palliative care.

More surprising, however, was the overwhelming number of young children who arrived with toothaches and abscesses caused by dental caries. Several explanations are offered:

a) The majority of the municipalities in the greater Montreal area do not have fluoridated water.

b) The government sponsored preventive program is delivered in the schools to first, second and third graders. It has proven beneficial,¹ but preschool age children are not reached. This deficiency is reflected by the findings that 70 per cent of toothaches and 48 per cent of dental infections caused by dental caries were found in children aged one to five.

c) There is a general feeling that the rate of dental caries has decreased considerably in North America in recent years, and that this particular problem is no longer of concern. In 1992, the same year that this compilation was made, a study¹ was published that surveyed

the same population group. It showed a dramatic improvement in the DMFT index in 13 and 14 year olds relative to the scores obtained for the same age group 12 years previously. However the preschool population was not examined.

d) The treatment of severe dental caries in the very young often requires the use of sedation and/or general anesthesia. Specially trained professionals and adequate physical resources are not always available.

e) Some health care professionals and members of the general population still believe that primary teeth need not be maintained.

f) Although the condition has been well publicized,⁴ the effect of nursing caries is still seen in a considerable number of young patients.

Conclusion

This survey analyzes the emergency cases seen at a single hospital dental clinic. It is difficult to compare the results with other centres, since a review of the dental literature of the past 10 years has produced only one article⁵ pertaining to the same subject. In a Belfast pediatric hospital during the calendar year 1987, Fleming et al found that toothaches accounted for 49 per cent of all the dental emergencies, followed by acute trauma (39 per cent). It would be interesting to conduct a similar study in a comparable pediatric hospital located in a fluoridated community.

A more specific classification of these cases has been presented in light of the fact that these types of dental emergencies are unique for this type of population. The main complaints prompting the emergency visits were overwhelmingly dental pain and traumatic injury. However, other observations were made. The experience of this particular institution contradicts the recent conclusions of the World Health Organization committee on recent advances in oral health, which stated in December 1991⁶ that:

"... it is clear that current knowledge is sufficient to control caries, if not to eliminate it. The full and

appropriate application of the methods that are available to prevent caries presents a special challenge to oral health professionals..."

Finally, comments have been presented that may explain in part the results of this institutional survey. It is hoped that similar surveys will be conducted in other centres. ■

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Management Of Non-Nutritive Or Digit-Sucking Habits In Children — A Practical Approach

Keith R. Morley CD, B.Sc., DMD, FRCD(C)

Thomas McIntyre DDS, Dip. Ortho.

Introduction

Dentists who treat children are regularly asked about child thumb and/or finger-sucking. In most cases, parents want to know: "What can I do about my child's thumb-sucking (or finger-sucking) habit? He (or she) does it all the time and it really annoys me!"

There are two key points to consider in this question: the chronicity of the habit and who it really annoys, i.e. not the child, but the parent.

Modern ultrasound prenatal screening techniques have shown that many children suck their thumbs or fingers even before birth. Sucking digits can also develop as a spontaneous activity soon after birth,¹ but usually decreases with the development of other sensory and motor activities.² A number of authorities^{3,4} consider the habit to be normal behavior during the first two to three years of life. Reports place the number of children who suck their digits at anywhere from 13 to 45 per cent.^{5,6} Most children begin the habit during the first three months of life. The average time for cessation is four years of age.⁶

Sucking is essential for both psychological and nutritional requirements. Infants experience stimuli from the lips, tongue and oral mucosa, and learn to achieve a greater

sense of security from the parent.⁷ Therefore, sucking for food is regarded as normal at infancy.

Babies who have frequently been unable to suck or had their sucking severely restricted due to disease, neglect, or abuse can become restless, irritable or, at the other end of the spectrum, apathetic and listless.⁸ Children may be observed sucking their digits in every conceivable set of conditions. Some suck during sleep, others while fully awake, and still others during different mood cycles such as when they are content, hungry, upset, stressed, or depressed.⁸

Children can often be seen sucking their digits while holding onto a blanket or stuffed toy, or when stroking their nose or playing with their hair and ears.⁹ In other words, great pleasure is often associated with the habit and derived from it.

Psychoanalytical Versus Behavioral Views

The psychoanalytical contingent of health care workers believes that if the digit-sucking habit continues past the age of four, then it signifies the child is undergoing a deeper psychological disturbance.¹⁰ If the habit is forcefully stopped, however, then a more undesirable one may take its place.^{11,12}

Thumb-sucking may be only one manifestation of insecurity or maladjustment. Others include being afraid of the dark or of objects such as insects, dogs, snakes, etc.,

or even parental separation. Bed wetting, inability to relate to peers, or conflicts in the home may also be present and contribute to the habit. In other words, thumb-sucking may be a manifestation of emotional or deeper-seated internal conflicts.⁴

Behavioral theorists, on the other hand, believe that digit-sucking is strictly a learned habit or pattern of behavior, with no underlying emotional or psychological cause. If the habit is stopped, then the child should not experience any emotional or psychological problem, nor will the individual substitute a more undesirable habit.¹³

Effects Of Digit-Sucking On the Developing Dentition

The effect of digit-sucking on the dentition depends on a combination of factors, particularly the intensity, duration, and frequency of the habit. For example, the digit can be placed passively in the mouth or it can be aggressively sucked. The more aggressive the habit, the worse the dental effects. And the greater the number of years the child pursues the habit, the more deleterious it is to their oral health. The same statement can be made regarding frequency.

There is a definite association between Class II malocclusions and persistent digit-sucking.¹⁴ Prolonged digit-sucking causes the mandibular incisors to be displaced lingually and apically, while the maxillary central teeth



Fig. 1: Dental effects from thumb-sucking with secondary tongue thrust.



Fig. 2: Blister on thumb resulting from thumb-sucking.

are often moved labially and apically. During-sucking, an excessive force is often exerted by the cheeks against the posterior segments of the maxillary teeth. Therefore, increased overjet, anterior open bite, and posterior cross-bites are common (**Fig. 1**).¹⁴⁻¹⁷

Sometimes the negative effects on the occlusion will self-correct, providing the digit-sucking habit stops between four or six years of age. However, the self-correction of a digit-sucking induced malocclusion is dependent on many factors in addition to habit duration. These factors are: the severity of the malocclusion, the development of secondary tongue-thrust, mouth breathing, and lip posture.

Treatment Of Digit-Sucking In Children

A. Pre-Treatment Screening

In many cases, parents are most concerned about the habit and its stigma on the child, as well as how it may reflect on themselves as parents. Parents should be advised to ignore the habit until after age four, when some type of intervention may be required. In all cases, the following must be noted and investigated:

1. Societal Background

As a general trend, the more turbulent the home environment, the greater the chances of the child developing prolonged digit-sucking habits or other problems.^{19,20} Therefore, the clinician should inquire into the status of the family, particularly whether the parent is married, separated, common-law, divorced, or a single parent. In both single parent or multiple parent relationships, the legal custody of the child must be established.

Child abuse, drug abuse in the home, and alcoholism, all of which have increased dramatically in the '90s should be noted.^{19,20} In all cases where turbulence exists, the clinician is wise not to attempt to eliminate the sucking habit, as it may be a prime security item for the child.^{19,20}

2. Presence of Other Habits

The clinician should inquire if the child bed wets or sleepwalks. Caution is advised with these children.^{19,21}

3. School and Peer Relationships

A clinician should not attempt to correct a digit-sucking habit during a child's initial adjustment phase at school. This can be a very emotional time for children, greatly diminishing the chances for success. In addition, if a child is performing poorly at school or has a poor self-image, success is much less likely. If a child or members of his or her family are undergoing counselling or psychiatric care, then the clinician is wise to liaise directly with the councillor, psychologist, psychiatrist or institution.¹⁹⁻²¹ Written authorization from the parent or guardian is required by law before such communication can take place.

Intervention with special needs or mentally compromised children have a low success rate.

4. Employment Status

The '90s have seen dramatic changes in the job market, and a marked lessening in the value placed on human labor. Euphemisms such as restructuring, downsizing, centralization and international competition have become buzz-words to justify massive layoffs, resulting in unemployment on a worldwide scale. The lack of jobs and loss of

income has caused horrific stresses for the family.^{19,20} Therefore, any change in employment status should be noted before a clinician proceeds with treatment, and not just for financial reasons.

B. Dental Consultation

The clinical charts used by pediatric dentists should ask specific questions about the presence of a thumb- or finger-sucking habit. In addition, the fingers and thumbs should be physically examined to observe the presence of a callous or blister, or a wrinkled appearance. The greater the size of a callous or blister, or the more wrinkled the digit, the worse the habit is (**Fig. 2**).

If digit-sucking is confirmed, children should be asked if they suck their digit in conjunction with a blanket. The unhealthy condition of some of the childhood treasures used in conjunction with digit-sucking is amazing. Often the blanket must go and a substitute security item must be found.

C. Clinical Treatment

Once all the data have been analyzed, two prime treatment options are available — providing the clinician believes intervention is appropriate. The first is behavior modification, including reward therapy, while the second involves behavior modification in conjunction with appliance therapy.

During a specific appointment, the child should be shown models and photographs demonstrating the effects of thumb-sucking. These must be presented not in a derogatory fashion, but rather in an informative manner. Obviously, the child must be mature enough and have enough cognitive function to comprehend what is taking place. Should the child wish to stop sucking the digit, then proceed. However, if the child remains defiant, then go no further!

Behavior modification must always be used when appliance therapy is chosen. The appliance is presented in a positive, not punitive manner. It is described as a device that will help the child to stop his or her habit. Possible incentives for compliance include asking the parents to create a

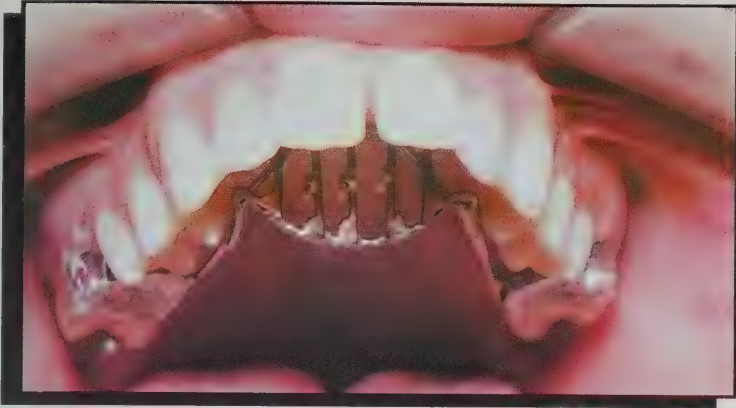


Fig. 3: Classic design recommended for a fixed thumb crib appliance

"Star" chart. Stars are added to the chart, which can be a simple calendar or an exotic multi-colored computer-designed creation, whenever the child's digit is seen to be out of his or her mouth. It's also important to ensure that the parents understand the limitations of the appliance. This can be accomplished by giving them a detailed instruction sheet (Table I).

Ideally, the child, parent, and clinician will be amalgamated together to form a team to assist the child in stopping the thumb- or finger-sucking habit.

The authors personally prefer the so-called fixed thumb crib appliance over a removable variety. In our opinion, a fixed appliance offers far greater chances for success (Fig. 3). Other clinicians' recommend the "Bluegrass" appliance. In today's litigious society, the hay rake or spiked appliance should be approached with extreme caution.

Bad tasting compounds placed on the offending digit, Band-Aids or socks, are of limited value. Most parents have already tried these approaches. Tying or pinning a child's hand onto his or her pyjamas is not recommended, and may only increase the child's frustration and wakefulness.

The selected appliance should be left in place for a minimum of eight weeks to a maximum of 12 weeks. However, the child should be seen after four weeks to assess progress.

Once successful treatment is accomplished, the appliance is removed. Both the parent and clinician

should insure that a reward is forthcoming for the child. The clinician should restrict her or himself to profuse verbal praise and simple rewards such as certificates, stickers, or a badge.

Before orthodontic treatment is initiated, the child's habit should be completely stopped. Correct management of digit-sucking habits will allow the clinician to assist children and parents through a most challenging time in emotional and dental development.

Conclusions

- 1 Digit-sucking habits should be regarded as normal up to the age of four.
- 2 Societal screening is essential before appliance therapy is contemplated.
- 3 A fixed digit crib appliance is recommended over a removable one.
- 4 The clinician must be completely familiar with appropriate psychological behavior modification techniques. ■

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Table I

An Example Of The Author's Handout To Explain Thumb-Sucking and Intraoral Habit-Controlling Appliances To Parents

Introduction

During infancy, sucking serves to make a child feel secure and happy. It is one of the inborn reflexes such as grasping an object, or eye movement. Without a sucking reflex, the child would not seek food and, quite frankly, have difficulty surviving. In addition, sucking provides security for a young baby until they are approximately two years of age.

Prolonged finger-, thumb-, or tongue-sucking can cause irreversible damage to your child's facial appearance. Specifically these habits can:

- 1 Promote collapse of the teeth in the upper jaws on both sides, which may enhance crowding of the permanent teeth once they erupt.
- 2 Cause an open bite malocclusion (misaligned teeth) and/or an increase in overjet (splaying out of the upper front teeth) to occur.
- 3 Distort the upper bone that supports the teeth.

Many of these conditions can be irreversible and will require full orthodontic braces to correct the problem once the child is older. Often an intraoral habit-controlling appliance or "thumb-crib" will arrest the habit, and decrease the potential for damage to the teeth and supporting structures. Generally speaking, the earlier the habit is stopped, the better is the prognosis.

Age

The minimum age for intervention with an appliance is age four. Until that time, do *not* ridicule or scold the child as this attitude will only make the habit worse. Use of bad tasting compounds on the thumb, or socks tied onto the hand are of *little* value. Many children begin to suck their thumbs/fingers even before birth.

Blanket

Many children will suck the thumb/fingers in conjunction with a "security" blanket. The blanket *must* go. Substitute with a cuddly animal or doll.

Appliance Design

A set of upper and lower jaw impressions will be taken and an appliance designed specifically for your child. The appliance will be non-removable and will be held in place by means of bands on the upper back molar teeth.

Oral Hygiene

Oral hygiene must be meticulous or else gingivitis (gum infection) and dental caries (cavities) may occur. Therefore, it is crucial that you brush your child's teeth and the appliance thoroughly to ensure all dental plaque is removed.

Restriction of Physical Activity

Rough-housing, active contact sports and swimming should be avoided. These activities may dislodge the appliance and/or lacerate the tongue and oral tissues.

Diet

Sticky candies, hard rock candies, corn on the cob *cannot* be eaten with the appliance in place. Apples, meat, chicken, etc. *must* be cut into small pieces.

Use of Behavior Modification Techniques

- 1 Your child will be shown models and photographs of teeth of children that have sucked their thumb resulting in extensive damage to their teeth and supporting structures. The effects of this habit will be explained to your child in a language that he/she will understand.
- 2 Once the appliance is inserted, you will be asked to maintain a chart utilizing "stick-on" stars that you can purchase at a store. You will be required to place a star on the chart each morning, afternoon and evening that your child does *not* suck the thumb for two weeks.
- 3 Following this period, an additional chart will be required for a further two week assessment period. In this case, one star per day only is placed when your child does *not* suck the thumb.
- 4 Following this period, the appliance will be left in place for a further month at which time you will be asked to place one star per week only when the habit does *not* occur.
- 5 If this period is successful, then the appliance will be removed for one month. You will again be asked to maintain a weekly record with a star chart placing a star each week that the habit does not occur.
- 6 If this treatment is successful, your child will then be awarded with stickers from the office for the accomplishment, which can be proudly displayed in the home.
- 7 Do *not* threaten or scold your child if failure occurs at any stage. Rather emphasize the positive, and encourage the child to do better. Reinforce the comments that were made by myself to your child during his/her initial visit to the dental office.

Summary

As previously mentioned, close cooperation between you the parents, the child, and the dental office is crucial for successful treatment. Please ensure that the instructions on this sheet are closely followed.

Keith R. Morley
Pediatric Dentist

W

hat you should know about Vinyl Impression Materials

Jeneric/Pentron has produced this booklet because we believe the more you know, the better your impressions will be. A few minutes spent reading this information may save you hours of chairside adjusting or remaking restorations. It will also save you lots of money.

D

oes Accuracy Matter?



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All vinyl impression materials take a more accurate impression than you will ever need. The accuracy of a vinyl polysiloxane impression material is inherent in the vinyl polymer. This polymer replicates so well, it can actually take an impression of the ink on a dollar bill. Moreover the nature of the vinyl is such that dimensional changes are minute - irrelevant.



Cured vinyl impressions are also extremely resistant to deformation so they reliably bounce back to their original shape. And they disinfect easily, without distorting.

In choosing vinyl impression materials, you are choosing the ultimate in accuracy and stability. What's important to you is not how accurate the material is, but how easy it is to use.

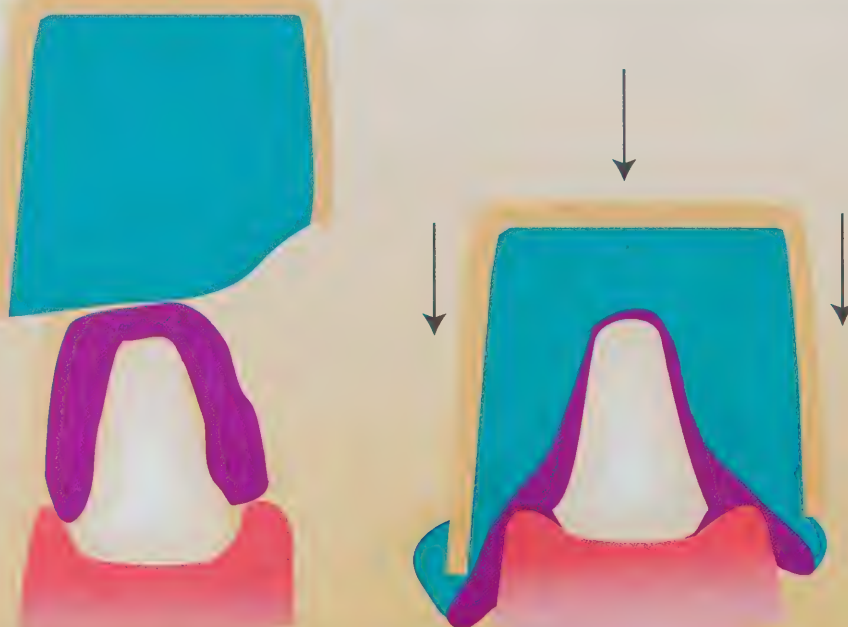
V

iscosity Matters

Every dentist chooses his or her own technique and has his or her own style of taking an impression. Each uses different methods of tissue management. Each syringes a little differently. Each applies a different amount of force when seating the impression tray. A good impression material must conform to the demands and compensate for the short-comings of every technique and style. *The key to such performance is viscosity.*

Simply put, the user and the impression material must provide the proper balance of *flow* and *hydraulic force* to capture detail. A syringe weight material must flow just enough to completely encompass the preparations. The tray weight material must propel the syringe material sufficiently to drive away moisture and deflect soft tissue. Ideally, it should not drive away so much syringe material that the impression is captured primarily in the heavier viscosity.

Because techniques and styles vary, Jeneric/Pentron offers an extensive selection of viscosities. With our help, you can choose the materials that are best suited for you.



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S

tability Matters

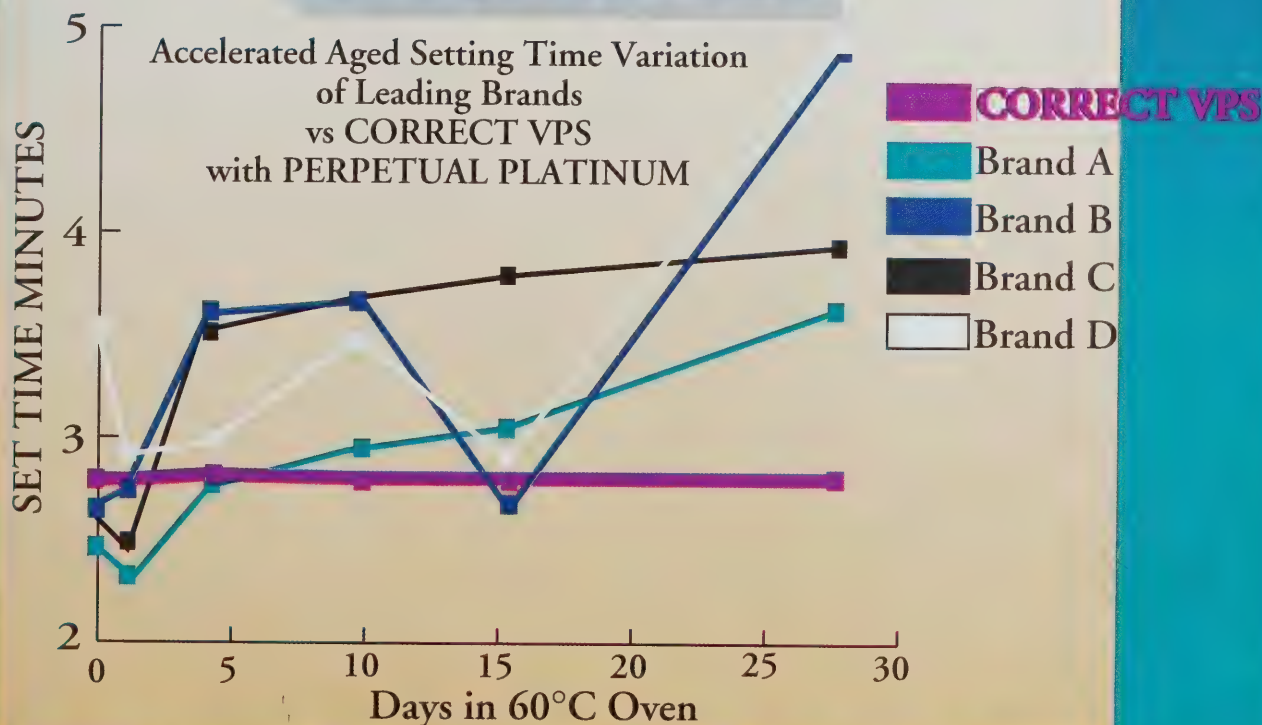
The process of taking an elastomeric impression involves the conversion of a fluid to a rubber. That conversion must be predictable in order to assure continued accuracy. Too short or too long a working time will affect accuracy. The preparations must be completely syringed and the impression tray set in place *before the setting begins*. Voids and distortions often occur when an impression material begins to set before the tray is placed in the mouth.

To combat these problems, Jeneric/Pentron has developed a new catalyst system which we call PERPETUAL PLATINUM.

PERPETUAL PLATINUM virtually eliminates impurities that can cause variations in setting times. The result is an impression material system that is so perfectly balanced, we guarantee its setting and stability.

PERPETUAL PLATINUM gives our impression materials a longer working time and a shorter setting time. This allows you more time to syringe your preparations without requiring you to keep the tray in the mouth longer.

All polyvinyl silicone impression materials are temperature sensitive, and the warmer the system, the faster the setting times. When used at approximately 72°F, Jeneric/Pentron impression materials will provide you absolutely predictable setting times . . . ALWAYS.



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Price Matters

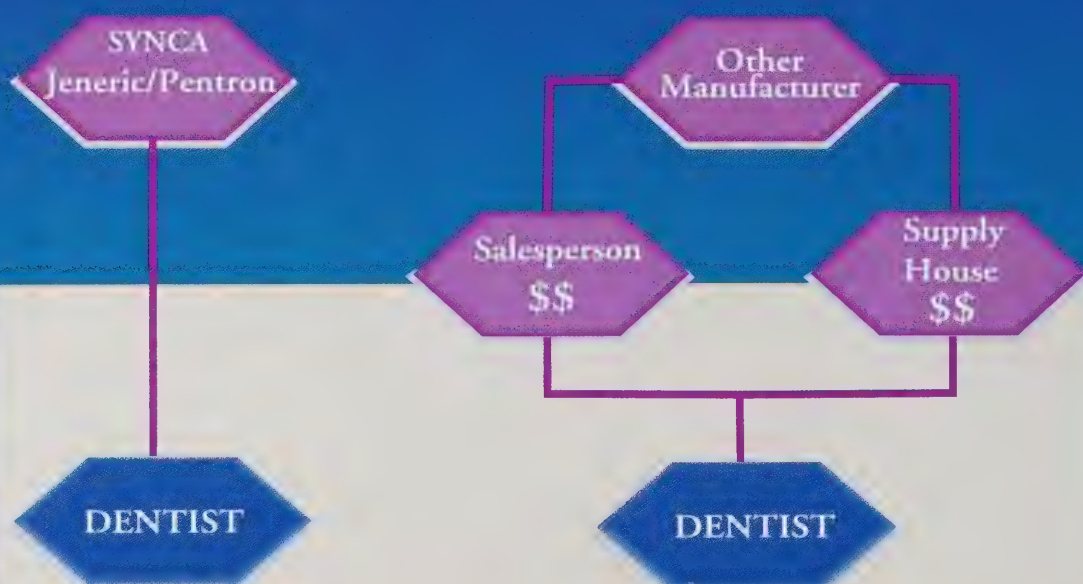
Knowing what you do know about impression materials, isn't it time you stopped paying those high prices?

When you buy from Synca, you buy at the same prices as if you were buying directly from the manufacturer, Jeneric/Pentron. That means you receive impression material for around the same price as a supply house buys someone else's.

This allows you to cut your impression material bill dramatically, while at the same time you

- use a material that conforms to your technique and style.
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*B*asic Impression Techniques:

Jeneric/Pentron impression materials were designed to suit your technique and fit your style. What follows is a guide to various impression techniques. We have selected what we feel to be the most common and straight forward procedures. If you wish to vary these techniques, we will be happy to recommend alternative materials where appropriate.

2 - Step (Traditional) Putty/Wash Technique

Non-oily, easily mixed and with a durometer of 65, Correct Putty is an ideal preliminary impression material providing many of the benefits of a rigid custom tray.

Use with a low viscosity impression material (wash) which, when applied with a syringe, produces a very detailed impression for crown and bridge. Also ideal for partial and complete dentures.



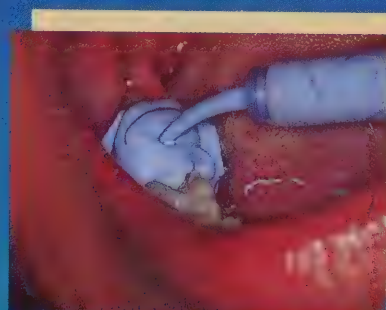
Taking the Putty Impression

Coat a plastic stock (or custom) tray with Correct Adhesive, let dry for 5 minutes. Dispense equal amounts of base and catalyst. Knead putty wearing Jeneric/Pentron Freedom Gloves (other gloves will contaminate putty) or with bare, thoroughly washed hands. Mix about 45 seconds. Place into tray and gently seat onto arch with slight rocking motion. Correct VPS Putty will set in 5 minutes from the start of mix.



Relieving the Putty

Relieve the impression with a sharp instrument or carbide bur to allow for light bodied wash (reline material). Remove all putty material beyond the occlusal table at the tooth preparation site and adjacent areas.



Syringing Wash Material Around Preparations

Use Correct VPS Light Body or Light EXTRA as a wash (reline) material for the putty impression. Dispense and mix. Syringe wash material around the preparation. Using an air syringe, lightly blow material into sulcus. Continue to cover entire preparation and adjacent sites.



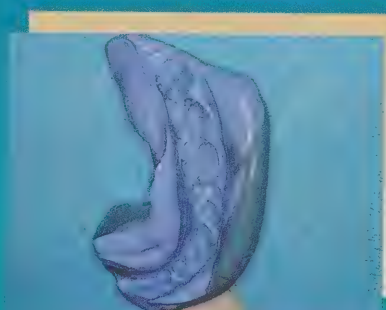
Placing Wash in Tray

Inject Light Body or Light EXTRA material into relieved area of preliminary putty impression.



Taking the Final Impression

Place impression over arch. Seat gently to place. Hold passively. Allow to remain in position for 5 minutes from start of mix. Remove impression from mouth.



Examining the Final Impression

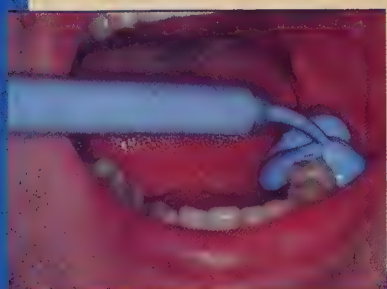
Examine impression. Immerse in Barisol Disinfectant (2% solution glutaraldehyde).

TEL: 1 - 800 - 66 - SYNCA

Double Mix Technique

The Double Mix technique is one of the simplest, fastest and most accurate impression techniques.

The heavy body material provides excellent hydraulic action - driving the light bodied wash into the sulcus, displacing interfering fluids and deflecting soft tissue.



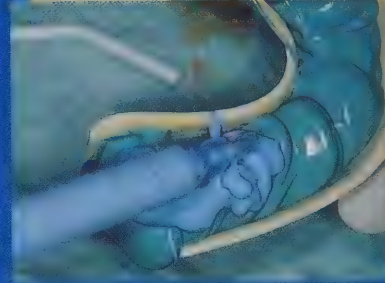
Mixing Wash Material

Extrude or mix Correct Light Body or Light EXTRA and fill intra-oral syringe. Syringe around the preparation. Using an air syringe, lightly blow material into sulcus. Continue to fill and cover entire preparation and adjacent site.



Heavy Body Mix

Time mixing of Heavy Body to correspond with syringing of Light Body. If using Heavy Body supplied in tubes, extrude equal amounts of base and catalyst and spatulate until streak free (30-45 seconds). Heavy Body is also available in cartridges. Fill tray evenly.



Placing Light Body Wash

Extrude Light Body or Light Extra onto Heavy Body material in tray. Place in preparation site and adjacent areas.



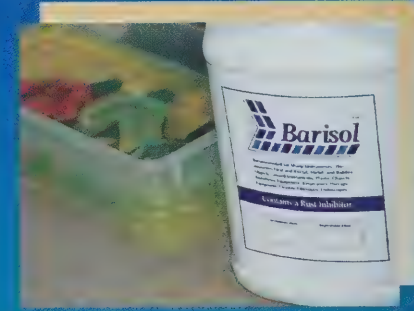
Seating the Tray

Place filled impression over arch. Push gently to place. Hold passively. Allow to remain in position for 5 minutes from start of mix.



The Final Impression

When set, remove impression from mouth. Examine for imperfections, voids, etc.



Disinfecting

Disinfect final impression using an immersion technique with Barisol (2% solution glutaraldehyde). See directions on bottle.

Triple Tray (Double Arch) Technique

The Triple Tray Technique has enjoyed popularity due to its unique ability to take accurate impressions of both arches and create a bite relationship at the same time.

It requires an accurate impression material with a high durometer, in order to provide sufficient tray support. Correct Bite can be used in both the tray and syringe or preferably in a double mix technique with light body syringe material.



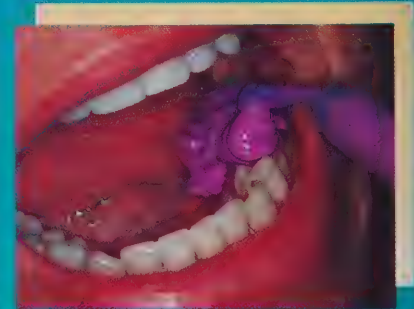
Filling Tray with Bite Material

Coat a triple (double arch) tray with Correct Adhesive and dry for 5 minutes. If using Correct Bite material supplied in tubes, extrude a sufficient amount of Correct Bite base and catalyst and spatulate until streak free. Fill both arches of the tray. Correct Bite is also available in cartridges.



Placing Light Body Wash

Extrude Light Body or Light Extra onto Correct Bite material in tray.



Syringing Light Body onto Preparation

At the same time tray is filled with Correct Bite, extrude Correct VPS Light Body material (auto-mix) and back-fill intra-oral syringe - or if using tubes, spatulate until streak free. Syringe Light Body or Light Extra around the preparation. Using an air syringe, lightly blow material into sulcus. Continue to fill and cover entire preparation and adjacent sites.

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Triple Tray (Double Arch) Technique continued . . .



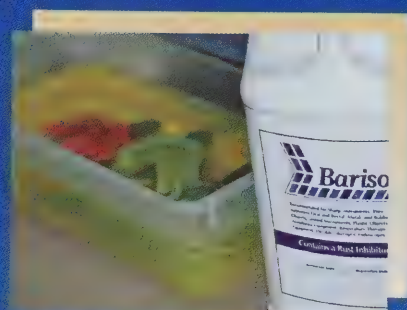
Seating the Tray

Place filled tray between arches. Have patient close gently into centric position. Allow to remain in position for 5 minutes from start of mix.



The Final Impression

When set, remove impression from mouth. Examine for imperfections, voids, etc.



Disinfecting

Disinfect accurate final impression using an immersion technique with Barisol (2% solution glutaraldehyde). See directions on bottle.

Q³

. . . Our One-Step Impression Material

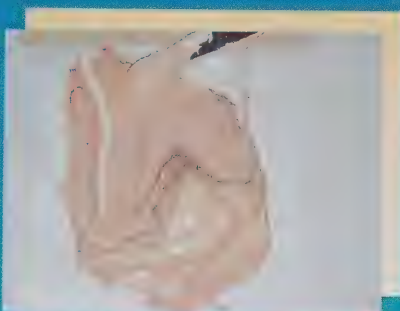
Q3 Universal is a new breed of premium, polymer reinforced vinyl impression material which captures the feel and hydraulic force of polyether and combines it with the advantages of vinyl polysiloxane.

Use Q3 Universal both in the syringe and tray for easy, accurate monophasic impressions. If you prefer a double mix technique, combine Q3 Universal with Q3 Light or Light EXTRA. Either technique yields exceptional results.



Measuring the Material

Coat a plastic stock or custom tray with Correct Adhesive. Let dry for 5 minutes. Extrude a sufficient and even amount of Q3 Universal base and catalyst onto pad.



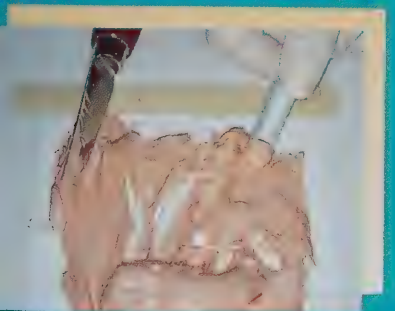
Mixing the Material

Spatulate until streak free.



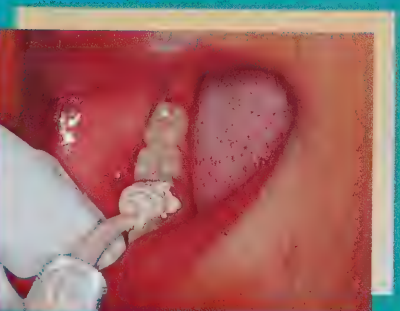
Filling the Tray

Fill the tray evenly and completely.



Back-filling the Syringe

Fill an intra-oral syringe in the conventional manner by scraping the barrel through the material at a 45° angle.



Syringing Q3 Universal

Syringe Q3 Universal around the preparation. Using an air syringe, lightly blow material into sulcus. Continue to cover entire preparation and adjacent sites.



Taking the Impression

Place filled impression over arch. Push gently to place. Hold passively. Allow to remain in position for 5 minutes from start of mix. Disinfect final impression using Barisol (2% solution glutaraldehyde). See directions on bottle.

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PUTTY Kit
305ml base, 305ml catalyst
\$47.80



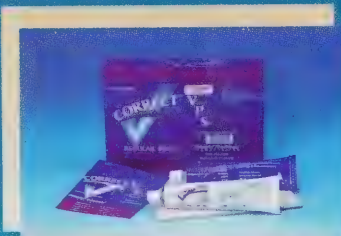
LIGHT EXTRA
Cartridge Kits:
• 4 - 50ml cartridges \$49.20
(with 12 mixers)
• 24 cartridge bulk \$245.20
(with 72 mixers)



LIGHT Tube Kits:
• Regular Kit: 90ml base,
90ml catalyst \$23.90
• Bulk Pack: 12 base,
12 catalyst \$233.00



LIGHT Cartridge Kits
• 4 - 50ml cartridges \$49.20
(with 12 mixers)
• 24 cartridge bulk \$245.20
(with 72 mixers)



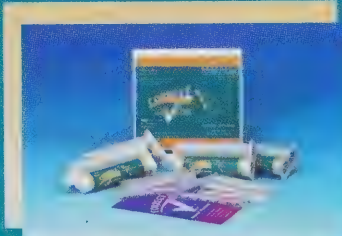
MEDIUM Tube Kits:
• Regular Kit: 90ml base,
90ml catalyst \$23.90
• Bulk Pack: 12 base,
12 catalyst \$233.00



MEDIUM Cartridge Kits
• 4 - 50ml cartridges \$49.20
(with 12 mixers)
• 24 cartridge bulk \$245.20
(with 72 mixers)



HEAVY Tube Kits:
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90ml catalyst \$23.90
• Bulk Pack: 12 base,
12 catalyst \$233.00



HEAVY Cartridge Kits
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(with 12 mixers)
• 24 cartridge bulk \$245.20
(with 72 mixers)



CORRECT BITE
Tube Kits:
• Regular Kit: 90ml base,
90ml catalyst \$23.90
• Bulk Pack: 12 base,
12 catalyst \$233.00



CORRECT BITE
Cartridge Kits:
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(with 72 mixers)
Specify REGULAR or FAST SET

Q3 Universal

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12 catalyst \$257.50



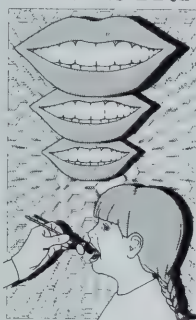
Q3 Light

- Cartridge Kits*
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PEDIATRIC DENTISTRY



A Simple and Inexpensive Resin-Bonded Bridge For the Replacement Of Missing Anterior Teeth In the Young Patient

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Sigal, M.J., DDS, Dip. Pedo., M.Sc., MRCD(C)

Maahre, W., RDT

Levine, N., BA, DDS, Dip. Pedo., M.Sc.D., FRCD(C)

ABSTRACT

This article describes and illustrates the fabrication and use of a simple resin-bonded bridge in young patients with missing anterior teeth.

SOMMAIRE

Dans cet article, on décrit et on illustre la fabrication et l'usage d'un simple pont lié à la résine pour remplacer des dents antérieures que de jeunes patients ont perdues.

Introduction

The advent of the acid etch technique for bonding bridges, in 1973, has largely eliminated the need for single or multiple tooth removable partial dentures in the young patient (Fig. 1). Resin-bonded bridges, known by various names, most commonly the Maryland bridge, have been used successfully for over 20 years for both anterior and posterior prostheses. In the young patient, they have been used primarily to replace anterior teeth that are congenitally-missing (Fig. 2) or lost due to dental pathoses or traumatic injury. The current quality and design of the cast resin-bonded bridge has proven successful both as a transitional

and/or "permanent" prosthesis, particularly where there is a reluctance to perform extensive tooth reduction on a sound tooth. Several investigators have identified the advantages and disadvantages of resin bonded bridges (Table I).⁸⁻¹⁰

The advantages include: limited or no enamel reduction; reversibility of the procedure; minimal disturbance of pulpal and periodontal tissues; no requirement for local anesthesia; less time-consuming procedures; simplified impression techniques; and lower cost to the patient. In turn, the disadvantages include: compromised retention with the risk of debonding and the possibility of aspirating the prosthesis; unsuitable for use in patients with evidence of anterior parafunction, heavy anterior guidance, or deep overbite; unsuitable for use on abutments heavily restored with lingual amalgam restorations; restricted to short edentulous spans replacing one tooth; possible greying of abutments; unsuitable for use in patients with abnormal neuromuscular problems.

There are two general groups of resin bonded bridges: the direct pontic and the cast pontic. Three different direct pontic resin-bonded bridge systems have been described: the acrylic tooth pontic,

the composite resin pontic and the natural tooth pontic. The clinical longevity of direct pontic resin-bonded bridges has been variably reported to be 30 - 100 per cent.²⁻⁶ Historically, the main disadvantage of the direct pontic technique is its lack of strength to resist the torquing forces that result in cohesive fracture of the adhesive composite resin.⁷

Since the introduction of the cast pontic resin-bonded bridge, the direct pontic bridge has been considered obsolete. The cast pontic prostheses consist of a cast framework that is individually fabricated. Although there are many variations in framework design, the common elements consist of a cast metal framework with "wings" that are bonded to the lingual and possibly the proximal surfaces of abutment teeth. The wings of the framework extend from the metal component of the pontic, which is created by fusing porcelain to the cast metal framework. Since the inception of the cast pontic technique, the cost of these procedures has increased dramatically. This sometimes precludes its use for the young patient.

Design and Impression Technique

A new technique for a simple, stable and affordable resin-bonded bridge to replace missing anterior

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Fig. 1: A temporary Hawley retainer with prosthetic teeth replacing teeth 12 and 22, fabricated by the orthodontist.



Fig. 2: This 16-year-old male patient presented with an ideal Class I postorthodontic occlusion with minimal overbite and overjet and posterior guidance. Teeth 12 and 22 are congenitally missing.

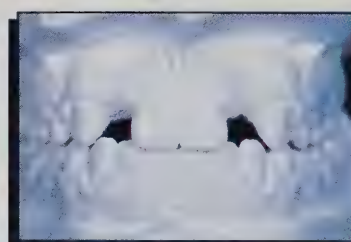


Fig. 3: Stone dental casts poured from alginate impressions in centric occlusion.

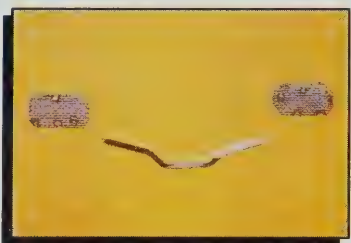


Fig. 4: Framework components: flat stainless steel wire (.018" x .025"), abutment pads made from thin stainless steel bond material (.002") and fine stainless steel mesh spot-welded together.

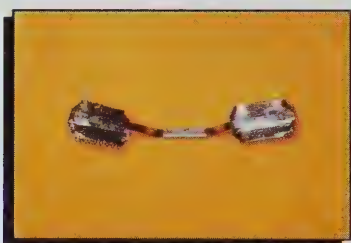


Fig. 5: Spot welded framework.



Fig. 6: Assembled framework.

teeth in young patients has alleviated many of the above concerns. This new design combines the advantages of both the direct pontic and cast pontic techniques, while minimizing the disadvantages. The bridge consists of two parts, the framework and a custom-adapted acrylic denture tooth pontic. The impression technique involves taking maxillary and mandibular alginate impressions and a bite registration in centric occlusion. Mould and shade selection are then completed using denture tooth mould and shade guides.

Laboratory Technique

Impressions are poured in dental stone (**Fig. 3**), surveyed and mounted on the articulator in centric occlusion. The overbite can be marked on the lingual surfaces of abutment teeth to facilitate the determination of the size and shape of the abutment pad, which is made of thin stainless steel band material (.002") and fine stainless steel mesh spot-welded together at low energy setting. Pads are shaped to exact size and burnished to fit the lingual surfaces of the abutment

tooth. The framework is made of flat stainless steel wire (.018" x .025"), which is bent to be positioned in the middle, between the labial and lingual, of the edentulous space (**Fig. 4**). The height is determined by the position of the abutment pads. The wire framework is spot-welded in the centre of the abutment pads and extends from the distolingual margin of the mesial abutment tooth pad to the distolingual margin of the distal abutment tooth pad (**Fig. 5**). The spot-welded abutment pads and framework are replaced on the

Table I

Advantages and Disadvantages of Resin Bonded Bridges⁸⁻¹⁰

Advantages	Disadvantages
1. Limited or no enamel reduction	1. Increased risk of debonding
2. Reversibility of the procedure	2. Should not be used with anterior parafunction, anterior guidance or deep overbite
3. Minimal disturbance of pulpal and periodontal tissues	3. Should not be used on abutments heavily restored with lingual amalgam restorations
4. No requirements for local anesthesia	4. Restricted to short edentulous spaces
5. Less time-consuming procedures	5. Possible greying of abutments
6. Simplified impression technique	6. Patients with neuromuscular disorders
7. Lower cost to the patient	

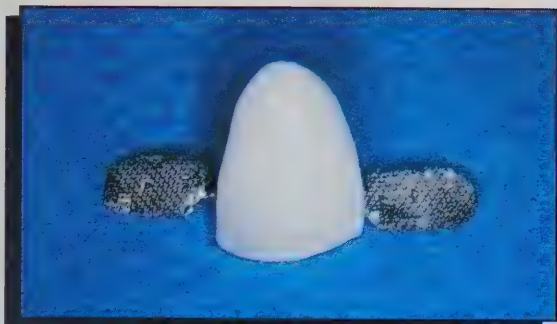


Fig. 7: Note retentive mesh framework on completed bridge after sandblasting to remove debris.

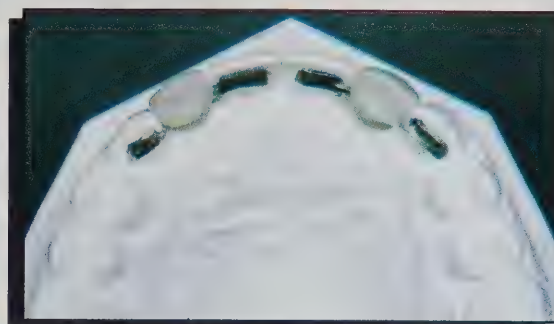


Fig. 8: Completed laboratory fabrication mounted on stone models.

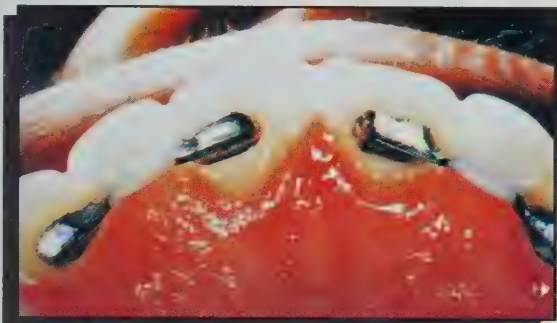


Fig. 9: Palatal view of cemented bridge in patient presented in Fig. 2.



Fig. 10: Teeth 12 and 22 replaced using a new simple and affordable design of resin bonded bridge.

cast, readapted if necessary, and soldered using orthodontic silver based solder (**Fig. 6**). During soldering, the stainless steel mesh must be protected by antflux to prevent solder from entering the bonding surfaces. The framework is then cleaned and polished.

The acrylic pontic is made from a preselected acrylic denture tooth of predetermined mould and shade. The tooth is hollowed out to accommodate the framework and fitted to the edentulous space. A plaster matrix is made, the cast is coated with separator, the mesh is protected with wax to prevent acrylic from seeping into it, and the framework is positioned on the cast. Cold cure tooth-color acrylic is used to attach the tooth to the framework. The wax is then boiled out, the pontic trimmed and shaped to the ideal figuration for esthetics, function and hygiene, and finally polished.

The mesh of the abutment pads is sandblasted with a fine quartz abrasive to maximize the bond potential with the resin cement (**Fig. 7**), and the bridge is returned from the dental laboratory seated on the

stone model, ready for intraoral placement (**Fig. 8**).

Intraoral Placement Procedure (Cementation)

Prior to intraoral seating, the lingual surfaces of the abutment teeth are polished with flour of pumice to remove any pellicle or plaque. Care should be taken not to cause any gingival bleeding as this may interfere with the bonding potential of the resin cement. The bridge is then seated into place on the lingual surfaces of the abutment teeth. The pads are burnished, if necessary, to maximize fit, and the gingival contours of the acrylic pontic are adjusted to allow ideal esthetics, function and hygiene. A lead pencil can be used to mark the desired height of the pads on the lingual surfaces of the abutment teeth as a guide during cementation.

Optimal bonding is achieved by: cleaning the enamel with flour of pumice before etching; etching the abutment teeth; thorough rinsing of the etched surface; use of a bonding agent that allows bonding of the cement to both the restoration and

surrounding tooth structure; sandblasting the metal internal mesh-work to remove debris and make the surface irregular and retentive.

Auto-cured resin cements are the logical choice for this type of restoration. Comspan (Caulk) was used with Scotchbond 2 (3M) bonding resin in this clinical study. Other popular bonding agent/resin cement systems could include Panavia (J. Morita), C & B Metabond (Parkell), SuperBond C & B (Sun Medical), Clearfil New Bond (J. Morita) and others. Once the bridge is seated and the excess cement has set, the margins of the abutment pads are trimmed and polished (**Fig. 9**). Finally, the incisal edge of the acrylic pontic is shaped and polished to maximize the esthetic potential (**Fig. 10**). Although factors such as careful design, laboratory fabrication and cementation techniques will influence the long-term success of this resin-bonded bridge, the most important factor is careful case selection.

Case Selection

Case selection includes the normal procedures performed for all

Table II

Indications and Contraindications in Case Selection¹⁰

Indications	Contraindications
1. Single tooth replacement	1. Multiple tooth replacement
2. Adolescent patients with large pulp space not suitable for full coverage restorations	2. Grossly resorbed edentulous alveolar ridge
3. Abutments with sufficient enamel for etching	3. Evidence of anterior parafunctional habits
4. Stabilization following orthodontic treatment	4. Deep bite anterior guided occlusion
5. Minimal overbite and posterior guided occlusion	5. Periodontally compromised abutments
	6. Abutments heavily restored with lingual amalgam restorations, reducing resin bond strength
	7. Patients with neuromuscular disorders

patients including: medical and dental history; extraoral and intraoral examination; and any necessary radiographic assessment. Careful attention must be paid at this juncture to ensure that the positive indications for the use of a resin-bonded bridge outweigh any negative contraindications (**Table II**).¹⁰

The indications for use include: single tooth replacement; adolescent patients with a large pulp space not suitable for full coverage restorations; abutments with sufficient enamel for etching; stabilization following orthodontic treatment; minimal overbite and posterior guided occlusion.

The contraindications for use include: multiple tooth replacement; grossly resorbed edentulous alveolar ridge; evidence of anterior parafunctional habits; deep bite anterior guided occlusion; periodontally compromised abutments; abutments heavily restored with lingual amalgam restorations, reducing resin bond strength; and patients with neuromuscular disorders.

Ideally, this bridge design is suited for use in a healthy young patient with a posterior guided occlusion for the replacement of a single anterior tooth that is congenitally missing or lost due to trauma or dental pathosis. The final stage in case selection is patient assessment. The patient's expectations and reasons for seeking tooth replacement must be considered, and the clinician must always be prepared to discuss the advantages, disadvantages and limitations of

this type of resin-bonded bridge as well as other alternatives.

Preliminary results on the use of this restoration as a semi-permanent prosthesis are encouraging. A total of 12 bridges have been placed using this design. The case presented here (**Fig. 10**) was originally completed five years ago and is still intact.

Conclusion

In this paper, we have presented an affordable alternative for the replacement of missing anterior teeth in the young patient, which meets the criteria of a semi-permanent fixed restoration. ■

Acknowledgements: The initial design and development of the laboratory technique for this simple prosthesis is credited to Dr. N. Levine and Mr. W. Maahre, RDT.

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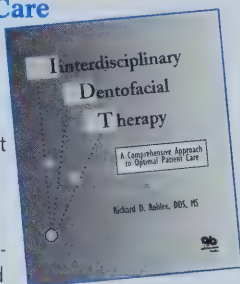
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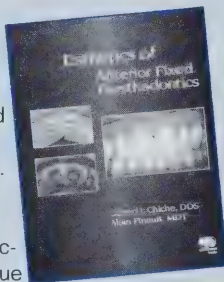


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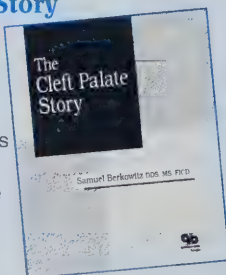


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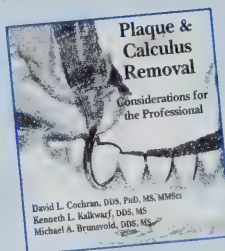
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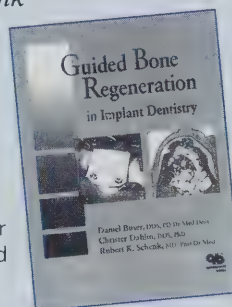
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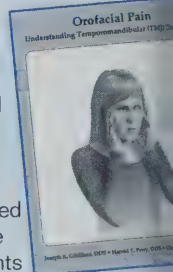


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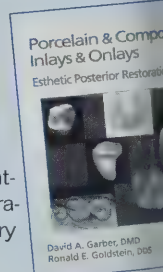


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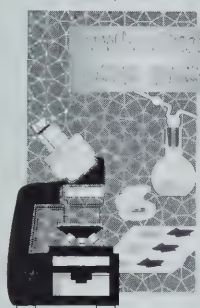
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Ontario Dentists: Practice Variation In Referrals To Pediatric Dentists

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ABSTRACT

Variations in the pediatric referral practices of general dentists for children aged zero to 14 years may be related to issues concerning quality and standards of care, cost containment, and predictability in third-party payment programs.

In September 1992, a survey mailed to a random sample of approximately 10 per cent of Ontario general dentists was used to gather information about pediatric referral practices as well as economic and demographic factors associated with these practices. Responses were received from 381 of the 540 dentists surveyed (69 per cent).

Most dentists who gave reasons for pediatric referrals (85.6 per cent) named behavior management problems as the primary cause. However, 21.5 per cent did not refer any children under 14 to pediatric dentists.

Due to the variable results obtained using assorted statistical tests to regrade the outcomes of interest, the self-reported nature of the data, and the large amount of pediatric referral practice variation left unexplained by the multivariate analysis (95 per cent), this study's findings are equivocal.

SOMMAIRE

Les variations dans l'orientation, par des dentistes généralistes, des patients de 0 à 14 ans à des dentistes pédiatres peuvent être liées à des facteurs ayant trait à la

qualité et aux normes des soins, à la compression du prix de revient et à la prévisibilité des régimes de soins dentaires.

En septembre 1992, on a posté un questionnaire à environ 10 p. cent des dentistes généralistes de l'Ontario choisis au hasard afin de recueillir des données touchant l'orientation des enfants à des dentistes pédiatres et les facteurs économiques et démographiques connexes. En tout, 381 dentistes sur les 540 sollicités ont répondu au questionnaire, soit 69 p. cent.

La plupart des dentistes qui ont donné des raisons pour l'orientation de patients à des dentistes pédiatres (85,6 p. cent) ont évoqué comme principale raison des problèmes de gestion du comportement. Cependant, 21,5 p. cent des dentistes généralistes n'ont adressé aucun enfant de 0 à 14 ans à des dentistes pédiatres.

Vu que divers tests statistiques reclassant les points d'intérêt ont donné des résultats différents, que le questionnaire laissait beaucoup de latitude aux répondants et que l'analyse multivariée a laissé inexpliquées un grand nombre de variations dans l'orientation des jeunes patients (95 p. cent), les résultats de cette enquête sont ambigus.

Introduction

The Children in Need of Treatment Program (CINOT), which began in 1987, is 100 per cent funded by

the Ontario Ministry of Health. Where the cost of treatment poses a financial hardship, this program provides dental services to children under 14 years of age who urgently need dental care.

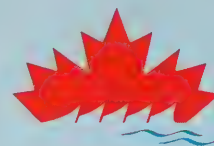
For the purposes of this study, difficulty in estimating the total CINOT funding of individual health departments raised a number of equity issues related to dental care. For example, individual health departments whose CINOT expenditures exceeded the allocated budget sometimes found it necessary to eliminate or restrict some covered services. Also, the Ministry of Health experienced problems in budgeting and cost containment.

In a separate study for the Ontario Ministry of Health, various factors were found to be significantly related to over- and under-expenditure in the program. One of the most significant factors was the percentage of services provided to enrolled children by pediatric dentists. In 1991, their billings represented 25 per cent of total CINOT expenditures, while the average treatment cost per child was more than double the average treatment cost of children treated by a general dental practitioner.¹

In a children's dental program such as this, it is reasonable that the pediatric dentist would be the specialist most often used. However, in an era of rising costs for dental care and a shift in the cost burden to third-party payers, the

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**FDI
1994**

82ND WORLD DENTAL CONGRESS ♦ VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE ♦ UPDATE

FDI 1994 ... It all came together!



For those of you who experienced FDI '94 with us we'd like to thank you for helping make it the success that it was. And it was a great success! 14,487 participants attended of which 6,063 were dentists! Attendees travelled from over 70 countries and spoke at least 60 different languages. From the 2nd to the 8th of October, they learned together, discussed together, discovered together and even played together.

FDI 1994 finally happened and the Organizing Committee feels a great deal of pride in being a part of this magnificent event. From literally hosting the world during the week of October 2nd to 8th to witnessing all of the elements of the meeting come together it was truly an honour to have contributed to an event such as this one!

From beginning to end it was a resounding success. The key word during the week was **SOLD-OUT!** Many of our hands-on courses sold-out twice, most of our social evenings were filled as well as the visits and one-day tours. The general scientific program was also very well received with attendance at lectures astounding. In many cases it was standing or sitting room only in the aisles and along the perimeter of the room!

Even nature was smiling down on us and gave us great weather the entire week. This made our spread into 5 venues (to accommodate everyone) more accessible and the walk between venues pleasurable. Our thanks to everyone for being such dedicated learners and going to classes when the weather was so inviting to be outdoors!

For sure one of the highlights of the week was the Opening Ceremony! 5,300 participants gathered together in a collectiveness of unity for an evening of entertainment and enjoyment. There was pride in the atmosphere and spirits were touched as the flags of the FDI member countries made their

way through the assembly during the Parade of Nations. It was very evident from the faces of the participants that they were proud and delighted to be representing their country at this international event. Then entertainment reached a pinnacle as Famous People Players made an outstanding performance to close the evening.

Of course, we couldn't forget about the exhibits! The pressure and demand was so high for exhibit space that we created a second exhibit hall. Although this was a costly and difficult undertaking for us, we felt we owed it to our exhibitors to accommodate as many as possible. The FDI 1994 dental trade exhibition was a hub of activity and a meeting place for participants.

For those who were not able to attend, we wish you had been there, you may have missed one of the more outstanding conventions of the decade! However, we have targeted Ottawa as our next destination so mark August 26 - 29 in 1995 and plan to join us.

The General Chair for the CDA 1995 meeting is Dr. Elizabeth MacSween. At this time she is diligently putting together her committee. I will be working with the convention staff on the '95 meeting and we'll use our expertise from 1994 to bring you a great CDA 1995 convention.

Hope to see you there!

Michel Jahjah, DDS
General Chairman
FDI 1994 Organizing Committee
c/o Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

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Table I

Survey Details

Feature	Description	Number
Sampling frame	RCDS mailing list Sept. 92	5,642
Target population	General practitioners	4,931
Selected sample	Random/systematic sample	540
Non-eligible respondents	Retired, students, etc.	20
Eligible respondents	540 - 20	520
No response	Questionnaire not returned	143
Withdrawal	Returned unanswered	16
Respondents analyzed	520 - (143 + 16) =	361
Withdrawal post deadline	Returned unanswered	2
Post deadline respondents	520 - (121 + 18) =	381

Table II

Characteristics of Respondents (n = 361).

Characteristic		Number	Valid Per Cent	Median	Range
Gender	Male	312	86.4%	—	—
	Female	49	13.6%	—	—
Year of birth		—	—	1952	1918-1968
Graduation year		—	—	1978	1943-1991
Years in practice		—	—	14	1-49
Practice Type	Private	354	98.3%	—	—
	Public health	1	0.3%	—	—
	Armed forces	2	0.6%	—	—
	Other	3	0.8%	—	—

reasons for specialist referrals should be investigated.

Factors associated with the variation in referral practices among general dentists may influence cost predictability and cost containment under CINOT and have quality-of-care implications. Therefore, it is of considerable interest to know what criteria general dental practitioners in Ontario use to refer children under 14 to pediatric dentists.

Methods

A questionnaire was sent to a sample of Ontario general dentists to obtain information about their pediatric referral practices and opinions. The questions were developed through a review of the relevant dental and medical literature in consultation with members of the University of Toronto dental faculty.

The sample size required to give precise (95 per cent certainty, $\alpha = 0.05$) estimates was then determined. To ensure that the responses to questions on attitudes, beliefs and behaviors were within five per cent of the population response ($n = 4,931$ Ontario general practitioners), 360 respondents were required for a question to which 50 per cent responded affirmatively or negatively. Allowing for a non-response rate of 33 per cent, the questionnaire was distributed to an initial sample of 540 general dentists.

The sample frame used was the Royal College of Dental Surgeons' list of members as of September 1992. Initially, identifiable dental specialists, full-time dental academics and those dentists residing outside Ontario were excluded from the sample. A systematic 10

per cent random sample of names was drawn. The resulting group of 540 general practitioners represented 10 per cent of all dentists licensed in Ontario and 11 per cent of general practitioners. Using Dillman's survey approach, three mailings, including a post-card reminder, were sent to the selected random sample.² The returned questionnaires were edited and coded and the data obtained were then entered into personal computers for analysis.

Results

Details of the survey are provided in **Table I**. Three hundred and ninety-seven questionnaires were received during an eight-week period following the initial mailing. Of those, 36 were either unanswered or non-eligible, leaving 361 valid returns for analysis

Table III

Comparison Of Respondents Versus Non-Respondents (Per Cent Distribution)

Characteristic		Eligible Respondents n=520 %	Respondents n=361 %	Non-respondents n=159 %
Gender	Male	85.6	86.4	83.1
	Female	14.4	13.6	15.8
Graduation Year	1943-1969	31.0	26.0	32.7
	1970-1979	31.4	30.0	34.3
	1980-1991	37.6	44.0	35.3
University	Toronto	64.1	63.2	65.8
	Western	21.2	22.4	19.1
	Other Canadian	8.9	8.6	10.2
	Foreign	6.8	5.8	7.9
Population Size of Practice Location	0 - 24,999	23.9	23.2	25.6
	25,000 - 99,999	20.6	21.2	19.0
	100,000 - 499,999	35.4	36.6	32.1
	500,000 plus	20.1	19.0	22.6

Table IV

Most Common Reasons For Referring Children To Pediatric Dentists (n = 271)

Primary Reason	Number	Per cent
Medically compromised	18	6.6
Behavior cannot be controlled	232	85.6
Fee not commensurate with time or complexity	2	0.7
Prefer adult patients	1	0.4
Patient caseload full	1	0.4
Patient's decision	2	0.7
Refer only specific conditions, e.g. nursing bottle-carries	13	4.8
Do not want to initiate bad dental experience	2	0.7

(69 per cent). Characteristics of the respondents are provided in **Table II**. They were predominantly male, private practitioners with 14 (median) years of clinical practice.

Late responders (50) were more likely to be from large urban centres of over 500,000 ($p < 0.05$) and to have attended a foreign university. However, Chi-square tests revealed no significant differences between respondents and non-respondents with regard to gender, year of graduation, school, and the population size of their practice location (**Table III**).

Almost 80 per cent of respondents reported that they referred

some children under 14 years to pediatric specialists. The mean percentage of children referred by age at 0-4, 5-9 and 10-14 years was 11.8 per cent, 4.9 per cent and 0.7 per cent, respectively. However, 21.5 per cent of general dentists reported that they did not refer any children under 14 years.

Most general practitioners (85.6 per cent) who gave a reason for pediatric referrals named behavior management as the primary cause. **Table IV** shows the reported primary reason for pediatric referrals per dentist for those ($n = 271$) who referred patients and gave reasons.

The majority of respondents (87

per cent) reported that there was a pediatric dentist within 50 miles of their practice area. As well, the majority (77 per cent) believed that the availability and number of pediatric dentists in their practice area was adequate.

Regarding geographic distance, the findings suggest that general dentists who practice more than 50 miles from a pediatric dentist are less likely ($p < 0.00005$) to refer any patients (**Table V**). General dentists, however, who practice within 50 miles of a pediatric dentist are more likely ($p < 0.001$) to refer children to pediatric dentists, primarily because these patients' behavior cannot be controlled (**Table VI**).

Findings also indicate that dentists practising within 50 miles of a pediatric dentist and those practising outside the 50-mile limit refer significantly different mean percentages of children aged 0-4 and 5-9 years. The mean percentage of referred children aged 10-14 years, however, is similar regardless of the distance separating the general dental practice and a pediatric dentist (**Table VII** and **Table VIII**).

The results obtained using multiple linear regression indicate that only two variables — the percentage of practice caseload aged 0-4 years and the pediatric dentist-to-population ratio — remained sig-

Table V

Relationship Between Distance From Pediatric Dentist and General Dentists Who Do Not Refer Any Patients As the Primary Referral Reason (n = 349)

Primary Reason for Referral				
		Other	Do not refer any	Total
Pediatric dentist within 50 miles	No	63.5%	36.4%	44
	Yes	92.1%	7.9%	305

Table VI

Relationship Between Distance From Pediatric Dentist and General Dentists Who Refer For Behavior Management As the Primary Referral Reason (n = 349)

Primary Reason for Referral				
		Other and no referrals	Behavior management	Total
Pediatric dentist within 50 miles	No	47.7%	52.3%	44
	Yes	23.0%	77.0%	305

nificantly associated ($p < 0.05$) with the percentage of referred children aged 0-4 years. This accounts for 3.3 per cent of the variation in the number of referred children aged zero to four years. Also, only one variable — percentage of practice caseload aged five to nine years — remained significantly associated ($p < 0.05$) with the percentage of referred children in this age group. This accounts for 1.3 per cent of the variation in the percentage of children aged five to nine years who were referred.

Using logistic regression with dichotomized outcomes, only two variables — pediatric dentist within 50 miles, and years in private practice — remained significantly associated ($p < 0.05$) with behavior management as the primary reason for referral.

Discussion

Generally, the success of a mail survey depends on the response rate. Dillman's² methods were used in an effort to achieve a response rate of 70 per cent or greater. The response rate of 69.4 per cent for the analysis illustrates the value of this method. Although early and late respondents differed in selected characteristics, there was good similarity between the respondents and non-respondents overall. This suggests that non-re-

sponse bias may not have greatly affected the results of this survey.

While findings suggest that demographic factors, as well as the preferences and characteristics of general dentists, may be significantly associated with pediatric referral practices, it is important to note these factors account for approximately five per cent of the variation. There are viable explanations for this relatively meagre outcome.

It is quite possible that the wrong questions were asked in the questionnaire or that important questions were missed. Also, it is possible that the process of referring patients is so internalized and so dependent on multiple factors that it would be impossible to "tease out" specific unrelated reasons for referral practices.

Behavior management was strongly indicated as the primary reason for referral of children under 14 years of age. Of those dentists who referred patients and gave reasons, 85.6 per cent reported behavior management as the primary reason. This was followed by medically-compromised patients (6.6 per cent) and specific dental conditions such as bottle caries (4.8 per cent) as the primary reasons for referral. The findings are similar to those reported by Adair¹ and others.⁴⁻¹¹

It is important to note that 21.5 per cent of the respondents indicated that they did not refer any patients to pediatric dentists. For each patient age group, the percentage of non-referring respondents was: zero to four years, 29 per cent; five to nine years, 45 per cent; and 10-14 years, 81 per cent. The findings suggest that certain demographic factors may influence general dentists to select, or not select, various criteria for referring children to pediatric dentists.

An arbitrary distance of 50 miles was selected to represent a barrier to service. As the findings demonstrated, the 50-mile distance appears to represent a geographic barrier to referrals, with far fewer referrals occurring once the distance between a general dental practice and the pediatric dentist exceeds 50 miles. This suggests that general dentists are aware of such a barrier and that it affects their tendency to refer pediatric patients.

Dentists who practice within 50 miles of a pediatric dentist are more likely to refer children for behavior management problems. Those who practice more than 50 miles from a pediatric dentist are less likely to refer any children. Although this awareness of the physical barriers to service might be commended, it raises questions related to the standards of care for patients



Table VII

Comparison Of Group Means Of Percentage Of Children Referred Aged 0-4 (n = 350) For Dentists Within and Outside Of 50 miles Of a Pediatric Dentist

	Number of cases	Mean	Standard deviation	Standard error
Group 1	306	12.7	24.85	1.42
Group 2	44	5.4	17.77	2.68

Group 1 = General dentists within 50 miles of a pediatric dentist

Group 2 = General dentists outside 50 miles of a pediatric dentist

Degrees of freedom = 348

2-tailed significance = $p < 0.02$

Table VIII

Comparison Of Group Means Of Percentage Of Children Referred Aged 5-9 (n = 352) For Dentists Within and Outside Of 50 miles Of a Pediatric Dentist

	Number of cases	Mean	Standard deviation	Standard error
Group 1	308	5.3	12.75	0.73
Group 2	44	1.8	4.39	0.66

Group 1 = General dentists within 50 miles of a pediatric dentist

Group 2 = General dentists outside 50 miles of a pediatric dentist

Degrees of freedom = 350

2-tailed significance = $p < 0.0005$

with behavior management problems. Legal and societal changes in Canada now demand that patients receive treatment that meets or exceeds the standard provided by competent practitioners with expertise in the field.¹² If expertise is unavailable because of distance, however, what practical solutions do general practitioners and parents have available to them? The answer lies with the general dentists in these practice areas and with the Royal College of Dental Surgeons of Ontario (RCDS). Affected practitioners should pursue and retain their pediatric dentistry expertise through further education, training and experience, and the RCDS should ensure that appropriate courses and training opportunities are available.

The findings also suggest that general dentists who have been in practice for a greater length of time are more likely to refer children for behavior management problems. One explanation may be that the general dentist who has been in practice for a shorter time may be more inclined to treat the child in stressful situations, and may view

this or her perceived limitations differently from a longer-practising dentist. Conversely, dentists who have practised for a longer time may be more inclined to refer for behavior management problems because of their increased awareness of legal implications, or for various other reasons such as perceived ability, which is very complex and was not assessed in this study.

Three arbitrary age groups were defined from the study population under 14 years of age: children 0-4, 5-9 and 10-14 years. It was believed that this grouping would reflect referral percentages related to infants, toddlers and pre-school children, elementary school children and younger adolescents.

Almost three-quarters (72) of respondents indicated that they referred no more than five per cent of children aged 0-4 (mean = 11.8 per cent). Also, 84 per cent indicated that they referred no more than five per cent of children aged 5-9 (mean = 4.9 per cent). Nearly all (97.2 per cent) respondents indicated that they referred no more

than five per cent of children aged 10-14 (mean = 0.7 per cent). However, certain demographic factors (pediatric dentist to population ratio) and dentists' preferences (percentage of age cohort case load 0-9) were significantly associated with these low referral tendencies.

One explanation might be that the greater relative availability of pediatric dentists for a given population allows general dentists to refer more children, particularly those in the lower age range (0-4 years). Intuitively, it would also seem reasonable that general practitioners who voluntarily have a larger percentage of children aged 0-9 years in their case load would tend to provide more treatment to these children in their own practice.

In conclusion, it was hypothesized that reasons other than patient characteristics affect the variation in referrals of children aged 0-14 years, and thus might influence both cost predictability and cost containment in the CINOT program, as well as having quality of care implications. Efforts to explain the variation in pediatric referral practices in terms of other influences, such as the characteristics and preferences of dentists, demographic and economic factors, proved to be interesting but were inconclusive.

Therefore, the majority of children under 14 in the CINOT dental program may be referred due to patient characteristics (behavior management) rather than hypothesized factors. However, the qualitative and estimated nature of some of the data (e.g., relative gross and net incomes, and percentage of children referred) preclude a conclusive judgement with regard to the accuracy of the amount of variation explained (five per cent) using multivariate analysis.

Accordingly, although the findings suggest that their effect is minimal, the actual impact of variables such as years in private practice, distance from a pediatric dentist and pediatric dentist-to-population ratio, quality of care, cost predictability and cost containment in the CINOT and other third-party payment programs is uncertain. ■



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A special thanks goes to the sample of Ontario dentists who took the time to complete and return the questionnaire.

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1. For patients having coexisting gingivitis and periodontitis, the absence of gingival inflammation following treatment with Peridex may not be indicative of the absence of underlying periodontitis. Appropriate treatment of periodontitis is therefore indicated.
2. Peridex may cause staining of oral surfaces such as the film on tooth surfaces, restorations, and the dorsum of the tongue. Stain will be more pronounced in patients who have heavier accumulations of unremoved plaque. Stain resulting from use of Peridex does not adversely affect the health of gingivae or other oral tissue. Stain can be removed from most tooth surfaces by conventional professional prophylactic treatment. Additional time may be required to complete the prophylaxis. Discretion should be used when treating patients with exposed root surfaces or anterior facial restorations with rough surfaces or margins. If natural stains cannot be removed from these surfaces by a dental prophylaxis, patients should be excluded from Peridex treatment if the risk of permanent discoloration is unacceptable. Stains in these areas may be difficult to remove by dental prophylaxis and on rare occasions may necessitate replacement of these restorations.
3. A few patients may experience a slight and temporary alteration in taste perception while undergoing treatment with Peridex. Most of these patients accommodate to this effect with continued use of Peridex.
4. For maximum effectiveness the patient should avoid rinsing their mouth, eating or drinking for about 30 minutes after using Peridex.

ADVERSE REACTIONS: No serious systemic reactions associated with use of Peridex were observed in clinical testing. However, some adverse reactions have been reported in studies with Peridex or other chlorhexidine-containing mouth rinses. The most common side effects associated with chlorhexidine gluconate oral rinses are (1) an increase in staining of oral surfaces, (2) an increase in supra gingival calculus and (3) a slight and temporary alteration in taste perception. (see PRECAUTIONS). Epithelial irritation and superficial desquamation of the oral mucosa have been noted in studies of children using 0.12% chlorhexidine gluconate which were reversible upon discontinuation. There have been rare cases of parotid gland swelling and inflammation of the salivary glands, in patients using Peridex.

SYMPTOMS AND TREATMENT OF OVERDOSAGE: Ingestion of 10 mL of Peridex (0.12% chlorhexidine gluconate) by a 10 kg (10 kg or less body weight) might result in gastric distress, nausea, or signs of alcohol intoxication. Medical attention should be sought if more than 120 mL of Peridex is ingested by a small child. Signs of alcohol intoxication develop.

DOSAGE AND ADMINISTRATION: Peridex therapy should be directly following a dental prophylaxis. Patients using Peridex should be reevaluated and given a thorough prophylaxis at intervals not less than six months; they should be referred for periodontal consultation if necessary.

Recommended use is twice daily oral rinsing for 30 seconds, morning and evening after tooth brushing. Usual dosage is 15 mL (marked capful) of undiluted Peridex. Peridex is not intended for ingestion and expectorated after rinsing. Rinsing the mouth, eating or drinking should be avoided for about 30 minutes after using Peridex.

The suggested initial course of therapy is 3 months, at which time the patient should be recalled for evaluation. At the time of the recall visit the professional should:

- Evaluate progress, remove any stain, and reinforce proper techniques.
- If gingival inflammation and bleeding is controlled, discontinue therapy and recall the patient in three months to assess gingival health.
- If gingival inflammation and bleeding persists, continue Peridex therapy for an additional 3 months and schedule a three-month reevaluation.
- Evaluate for evidence of epithelial irritation, desquamation of the oral mucosa.

The following generally accepted grading scheme may be of value in evaluating the severity of gingivitis.

Loe and Silness
GINGIVAL INDEX (GI)

Grade	Description
1	Normal gingiva, no inflammation, no discoloration or bleeding.
2	Mild inflammation, slight color change, mild alveolar gingival surface. No bleeding.
3	Moderate inflammation, erythema, swelling, bleeding on probing or when pressure applied.
4	Severe inflammation, severe erythema and swelling, tendency toward spontaneous hemorrhage, some ulceration.

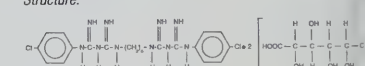
An occasional missed dose can be ignored if the patient is compliant with the prescribed regimen.

PHARMACEUTICAL INFORMATION DRUG SUBSTANCE

Proper Name: Chlorhexidine gluconate (U.S.A.N.)

Chemical Name: 1,1'-hexamethylene bis [5- (p-chlorophenyl) di-D-gluconate]

Structure:



Molecular Weight: 897.8

Description:

Chlorhexidine has basic character and exists in the di-cationic form at physiological pH. The two protonic positive charges become localized on the bi-guanide portion of the molecule. Both pKa's are 10.78 ± 0.06. The gluconate salt is soluble in excess water at 20°C.

At 19-21% w/v chlorhexidine gluconate solution is colourless, straw-coloured and is odourless to almost odourless (Pharmacopoeia).

COMPOSITION: Peridex contains 0.12% chlorhexidine gluconate, containing water, alcohol, glycerin, PEG-40 sorbitan di-flavour, saccharin sodium and FD&C Blue #1 Dye.

STABILITY AND STORAGE: Store above freezing (0°C).

INCOMPATIBILITIES: None known.

SPECIAL INSTRUCTIONS: None.

AVAILABILITY OF DOSAGE FORM: Peridex (0.12% chlorhexidine gluconate) is supplied as a blue liquid in 475 mL amber bottles with child-resistant dispensing closures. Store above freezing (0°C).

REFERENCE

1. Grossman E, Reiter G, Sturzenberger OP, et al. Six-month effects of a chlorhexidine mouthrinse on gingivitis. *Journal of Periodontal Research*. 1986;21(suppl 16):33-38.

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Product Monograph available upon request.

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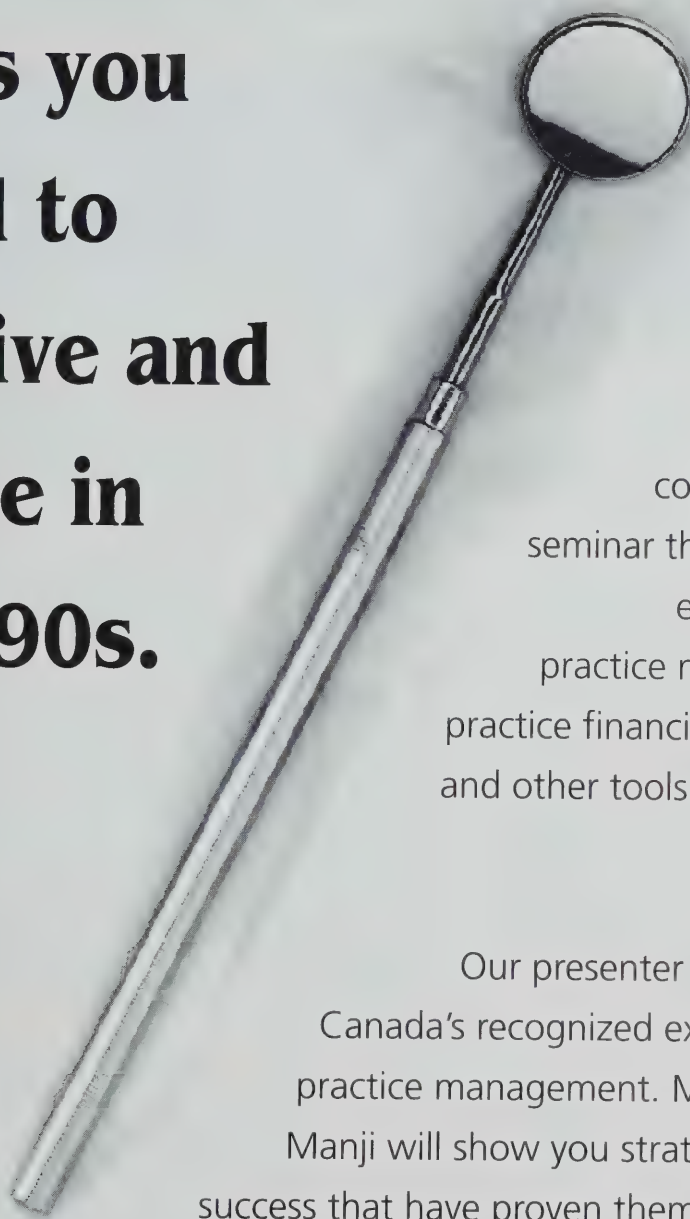
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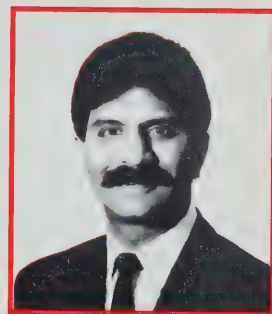
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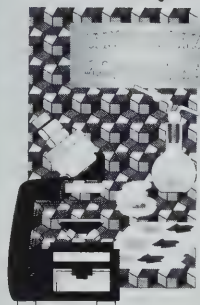
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SCIENTIFIQUE



Paresthésie : Résultat suite à l'extraction de 455 3^e molaires incluses mandibulaires

François Blondeau, DMD, FRCD(C)

Québec, Québec

SOMMAIRE

L'incidence de paresthésie suite à l'extraction de 455 dents incluses à la mandibule (3MM) est évaluée. Aucune paresthésie permanente alvéolaire (V3) n'est notée ni aucune paresthésie linguale. Une paresthésie temporaire du nerf dentaire inférieur chez trois patients est relevée avec une récupération complète en dedans de six semaines. Nous avons donc noté une incidence de paresthésie temporaire par dent de 3/455 (0.66 p. cent).

ABSTRACT

The incidence of paresthesia following the extraction of 455 mandibular impacted wisdom teeth is evaluated. No permanent paresthesia to the third branch of the trigeminal nerve is noted and no lingual paresthesia. A temporary dyesthesia of the inferior dental nerve is noted for three patients, with a complete return of integrity after six weeks. We have noted an incidence of temporary paresthesia of 3/455 (0.66 per cent) per tooth.

Introduction

L'ablation des 3^e molaires incluses (3M) représente un des aspects de la pratique courante du chirurgien buccal et

maxillo-facial.^{1,2} Cependant, l'extraction chirurgicale de ces dents implique certains risques. Precious³ en rapporte quelques-uns : alvéolite, trismus, infection, hémorragie, fracture, déplacement dentaire et altération nerveuse, traumatisme aux dents adjacentes, lésion à l'articulation temporo-mandibulaire. La dent le plus souvent incluse après la 3^e molaire supérieure est la 3^e molaire inférieure.⁴ L'incidence de paresthésie rapportée dans la littérature varie de 1 à 6 p. cent.⁵

Selon Sands² et Garcia,⁶ environ 65 p. cent des individus possèdent au moins une 3M incluse à l'âge de 20 ans. Sands rapporte qu'à l'âge de 24 ans 95 p. cent de toutes les 3M destinées à l'éruption ont effectivement fait émergence dans la cavité buccale. Precious⁵ rapporte qu'après l'âge de 22 ans les chances d'éruption sont minimales. Le risque de morbidité associé à l'extraction des 3M est donc présent et la décision de procéder à l'extraction d'une dent asymptomatique repose donc sur le jugement du dentiste référant ou du chirurgien. Les concepts quant à l'extraction ou la non-extraction des 3M dépendent de la philosophie des différentes facultés dentaires et en 1979, le National Institute of Health (NIH)⁷ n'a pas réussi à établir un consensus concernant

les dents incluses asymptomatiques sans pathologie.

Turcotte⁸ rapporte que dans le contexte nord américain, la plupart des auteurs s'entendent pour affirmer que les 3M devraient être enlevées selon certaines considérations. Il rapporte que l'habileté du clinicien doit également entrer en ligne de compte dans la prise de décision par le praticien général de procéder ou non à ce type d'extraction. Par ailleurs Stephens¹ en 1989 conclut son article en disant : « extraction should be limited to those teeth with defined pathologic indication such as infection, cyst, tumors, resorption and unrestorable caries. » Au Canada le nombre de poursuite, en regard de la chirurgie des dents incluses et aux complications qu'elles entraînent dont principalement la paresthésie, ont augmenté de façon importante depuis quelques années.⁹

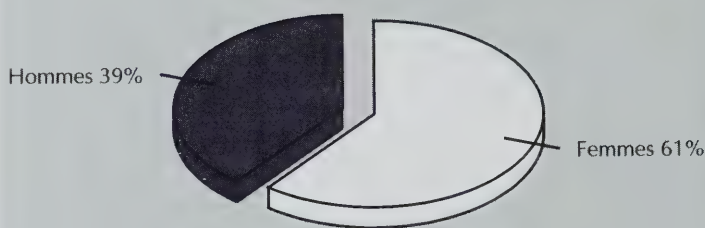
L'extraction des 3^e molaires mandibulaires (3MM) pose donc des risques de paresthésie tant au nerf lingual qu'au nerf dentaire inférieur. Ce risque doit être expliqué au patient. De fait, lors de la conférence du NIH, il a été décidé que le patient doit être avisé des risques chirurgicaux pouvant causer des lésions permanentes dans plus de 0,5 p. cent des cas. Il doit aussi être informé des risques chirurgicaux pouvant causer des lésions tempo-

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Tableau I**Répartition des patients**

Hommes	108	39,3%
Femmes	167	60,7%
Total	275	100%

Tableau II**Repartition des patients**

raires dans plus de 5 p. cent des cas.

Cet article évalue donc l'incidence de paresthésie dans une pratique de chirurgie buccale et maxillo-faciale dans la ville de Québec suite à l'extraction de 3MM.

Matériel et méthode

Dans cette étude prospective du 1^{er} juillet 1992 au 30 juin 1993, tous les patients référés pour l'extraction de 3MM ont été inclus dans la présente étude. En tout, 275 patients ont été référés en clinique privée de chirurgie buccale pour l'extraction de 455 dents. Tous ces patients furent traités par un dentiste spécialisé en chirurgie buccale et maxillo-faciale (FB). Le traitement fut effectué sous anesthésie locale avec ou sans sédation intraveineuses ou par inhalation (N2O).

Le jugement du dentiste référant et du chirurgien buccal furent les facteurs décisionnels pour l'extraction des 3MM et la raison de l'extraction n'est pas évaluée ici. L'article de Precious, Mercier et Payette publié en 1992 fait une revue des risques et bénéfices de l'ablation des 3M et le lecteur est

référé à cette étude.^{3,5} Cependant plusieurs dents présentaient des conditions pathologiques (péricoronite, kyste, carie, périodontite). Certaines, ont été extraites en vue d'ostéotomie mandibulaire sagittale subséquente. D'autres patients étaient référés pour extraction de 3MM asymptomatiques.

De routine, après évaluation par le chirurgien, les patients avec une possibilité de paresthésie sont avisés de ce risque. En post-opératoire immédiat (24-48 h) tous les patients reçoivent un appel téléphonique de façon à s'assurer qu'il n'y a aucune paresthésie résiduelle. Les patients présentant une paresthésie sont revus en contrôle. Si un doute est présent, les patients sont également revus pour évaluation. Cette évaluation est faite de façon subjective et par la suite la paresthésie est objectivée si présente (mouchoir et explorateur).

La technique chirurgicale employée est celle enseignée au Canada et aux États-Unis. La technique du « split lingual », employée en Grande-Bretagne n'est pas utilisée ici pour l'extraction de ces 3MM. La classification de ces dents

de sagesse n'est pas faite selon Asanami et Kasazaki¹³ considérant que ceci peut tout simplement morceler en sous-groupes le nombre de dents incluses et nous empêcher de faire une corrélation entre l'incidence de paresthésie et la classification des dents. Cependant, ces mêmes auteurs rapportent que les dents mésio-angulées sont plus fréquentes suivies des dents en position verticale puis horizontale, disto-angulée et enfin transversale. Nous avons relevé ces différentes angulations de façon à évaluer si des corrélations peuvent être faites, mais la profondeur de l'inclusion osseuse n'est pas relevée. Notre étude veut strictement évaluer l'incidence de paresthésie de façon générale après l'extraction des 3MM. La relation de la 3MM par rapport au nerf dentaire inférieur n'est pas effectuée en préopératoire avec les radiographies. Suite à l'extraction des 3MM une recherche systématique n'est pas faite de façon à vérifier la présence du nerf dentaire inférieur dans l'alvéole suite à l'extraction.

Résultat

L'âge des patients varie de 12 à 68 ans avec un âge moyen de 23,68. Les 275 patients se répartissent comme tel : 108 (39,27 p. cent) hommes et 167 (60,72 p. cent) femmes pour un rapport de 1/1,6 (**Tableau I** et **Tableau II**). Des 455 dents, il y a 224 #38 et 231 #48. La position des dents est répartie de la façon suivante : 211 dents en position mésio-angulée, 172 verticale, 48 horizontale, 19 disto-angulée et 5 transversale (**Tableau III** et **Tableau IV**). Une ostectomie utilisant une fraise à haute vitesse avec refroidissement à eau est utilisée pour 362 (79,56 p. cent) dents réparties de façon égale entre les dents #38 et #48. Une section dentaire (odontectomie) est nécessaire pour 345 (75,82 p. cent) dents soit 175 pour la dent #38 et 170 pour la dent #48.

Suite à l'extraction de ces 455 dents nous avons noté trois paresthésies qui furent temporaires. Ces trois patients (deux femmes et un homme) avaient été avisés du risque de paresthésie avant la chirurgie. Il s'agit de trois paresthésies gauches suite à l'extraction de la

Tableau III

Position des dents #38 et #48

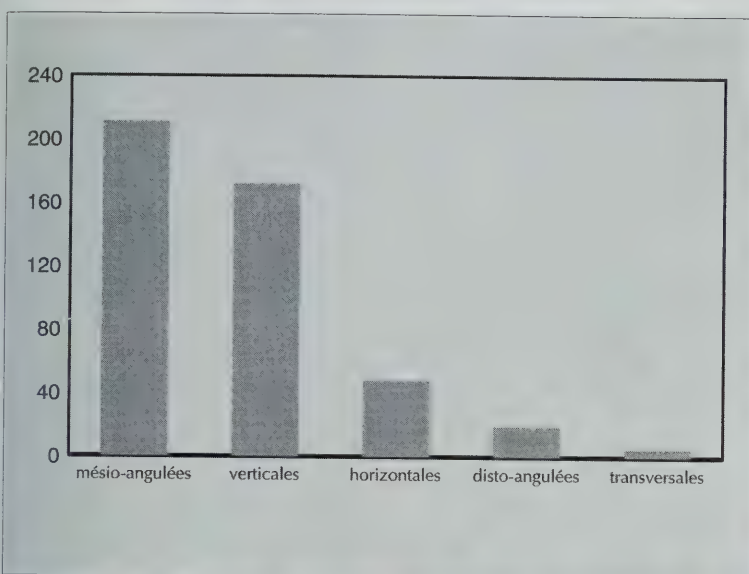
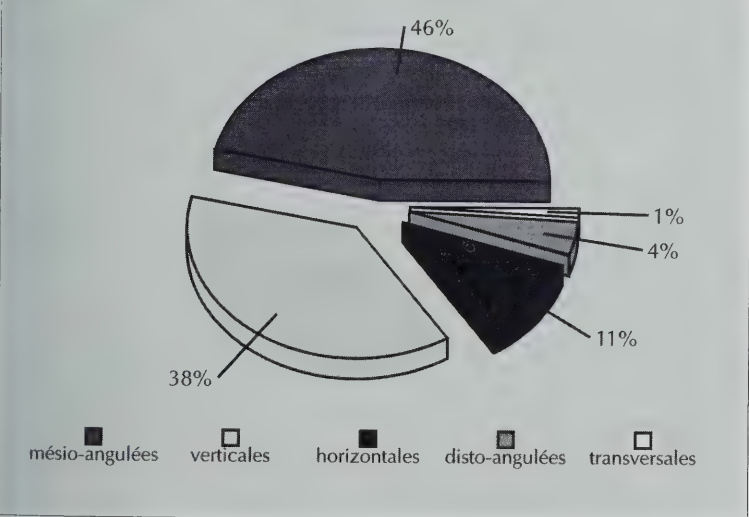


Tableau IV

Position des dents #38 et #48



dent #38 et ces dents étaient en position méso-angulée; une ostectomie et une odontectomie ont été nécessaires pour ces trois cas. Il est à noter qu'un de ces patients a subi l'extraction de la dent #35 incluse simultanément à l'extraction de la dent #38 incluse. Ces paresthésies furent temporaires et ont duré une, quatre et six semaines. Aucune paresthésie linguale n'a été notée dans notre étude.

Discussion

La paresthésie avec atteinte à l'intégrité de la lèvre inférieure, du

menton ou de la langue peut causer des désagréments au patient et l'amener à entreprendre des démarches légales contre le chirurgien surtout s'il n'a pas été informé du risque. Il est donc très important d'expliquer au patient la procédure chirurgicale prévue ainsi que les risques possibles selon le NIH en spécifiant bien les risques d'atteinte à l'intégrité nerveuse et de colliger cette information au dossier.

Au sujet de la position des dents, Chandler¹¹ rapporte la non-fiabilité de la radiographie. Swanson¹² sti-

pule que seul l'opérateur peut être en mesure d'évaluer la position exacte de la dent par rapport au nerf lors de l'intervention chirurgicale. Tel qu'il est connu, le problème avec les radiographies est l'absence de la troisième dimension. La relation entre la radiographie et la proximité du nerf dentaire inférieur n'a pas été faite parce que ceci est considéré peu fiable.^{12,13}

Swanson¹² rapporte une paresthésie temporaire de 5 p. cent avec une paresthésie permanente de 1 p. cent après extraction de 100 dents. De plus, il rapporte que la présence ou non du nerf dans l'alvéole n'a qu'une faible corrélation avec la paresthésie post-opératoire. Dans notre étude le nerf n'est pas recherché suite à l'extraction des 3MM quoiqu'il est visualisé à quelques reprises. Comme Swanson¹² nous n'avons aucune paresthésie linguale.

Wofford¹⁴ rapporte un total de 19 paresthésies suite à l'extraction de 576 3MM chez 315 patients. Comme nous, il n'a noté aucune paresthésie bilatérale. Il rapporte une paresthésie temporaire de 3,3 p. cent par dent extraite. Cet auteur rapporte une paresthésie linguale permanente, donc 1/576 (0,17 p. cent). Precious⁵ rapporte qu'une lésion du nerf lingual selon l'opinion populaire a un moins bon pronostic de guérison que le nerf dentaire inférieur. Cependant Rood¹⁵ avec la technique du split lingual rapporte une paresthésie temporaire du nerf lingual de 6,6 p. cent et aucun cas de paresthésie linguale permanente, toutes ayant récupérées.

La même étude¹⁶ rapporte une paresthésie (V3) de 7,5 p. cent temporaire et de 0,4 p. cent permanente après extraction de 1 403 3MM. Hochwald¹⁷ rapporte 6,8 p. cent (2,5 p. cent labio-mentale et 4,3 p. cent linguale) de paresthésie temporaire et aucune permanente suite à l'extraction de 598 3MM.

Nous serions portés à croire que l'atteinte nerveuse qui s'est manifestée lors de l'extraction des 3MM dans notre pratique de chirurgie buccale et maxillo-faciale correspond à une neuropraxie. De fait, toutes les paresthésies se sont ré-

sorbées en dedans de six semaines. Une paresthésie persistant au-delà de six mois serait considérée permanente selon les critères de Simpson¹⁸ et Kipp.¹⁹

Dans notre étude, l'utilisation de fraises chirurgicales pour l'ablation d'os et la section des dents selon leur position (mésio-angulée) semble être un facteur de risque relié à la paresthésie post-opératoire. Ceci a déjà été noté par Wofford.¹⁴ La paresthésie suite à l'extraction des 3MM pourrait être évaluée avec une étude prospective plus large de façon à en déterminer la signification statistique. La régénération du nerf lingual par rapport au nerf alvéolaire inférieur pourrait donc être évaluée en physiologie nerveuse.

Conclusion

Nous ne notons aucune paresthésie permanente dans notre étude de 455 dents. Une étude, portant sur un nombre plus élevé d'extraction de 3MM pourrait éventuellement démontrer un pourcentage de paresthésie permanente. Trois paresthésies temporaires se sont présentées du côté gauche. Chez ces trois patients l'utilisation de fraises chirurgicales a été nécessaire de façon à procéder à une ostectomie et à une odontectomie pour réaliser l'extraction de ces dents. Un patient ayant présenté une paresthésie a subi l'ablation de la #35 incluse de façon simultanée. Ce patient fait partie de notre rapport même si la paresthésie pourrait avoir été causée par l'extraction de la dent #35. Nous aurions donc pu nous attendre à une incidence de paresthésie plus faible. Il faut noter que les cas qui nous sont référés sont en général considérés par les praticiens généraux comme difficiles et dépassant l'expertise du dentiste généraliste.

L'incidence de la paresthésie après l'extraction de 3MM correspond aux chiffres les plus bas rapportés dans la littérature.^{4,14,17} Nous avons donc rapporté 455 extractions de 3MM chez 275 patients avec une incidence temporaire de paresthésie de 0,66 p. cent (3/455) par dent extraite. L'utilisation de fraises chirurgicales pourrait être évaluée dans une autre recherche de même que la position

des dents par rapport au risque de paresthésie. ■

Remerciement: L'auteur tient à remercier les docteurs Guy Maranda et Jean-Yves Turcotte pour la lecture de l'article ainsi que le personnel de la clinique Pascale Rousseau, Sonia Michel et Francine Boilard.

Le Dr. François Blondeau est chirurgien buccal et maxillo-facial à Québec.

Demande de tirés à part : Dr F. Blondeau, 1406 boul. René-Lévesque O., Québec (Québec) G1S 1X2.

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ANNOUNCEMENTS

National Highlights

January 27-28, 1995 Manitoba Dental Association Meeting

Contact: Mr. Ross McIntyre
(204) 453-0055

March 2-4, 1995 B.C. Dental Meeting

Vancouver, B.C.
Contact: Marilynne Webster
(604) 736-3645

April 7-8, 1995 Interim Meeting of the CDA Board of Governors

1-800-267-6354

May 11-13, 1995 Newfoundland Dental Association Meeting

St. John's, Nfld.
(705) 579-2362

May 11-13, 1995 ODA Annual Spring Meeting

Toronto, Ont.
(416) 922-3900 ext. 346

May 23-28, 1995 Alberta Dental Association Annual Meeting

Contact: Dr. Dave Scott
(403) 492-2014

May 26-27, 1995 New Brunswick Dental Society Annual Meeting

Moncton, New Brunswick
(506) 452-8575

May 27-31, 1995 24^e Congrès annuel de l'Ordre des dentistes du Québec — Les Journées dentaires du Québec

Montréal, Qué.
Contact: Nicole Pagé
or Ginette Boutin
(514) 875-8511
Fax: (514) 875-1561

May 30, 1995 Ordre des Dentistes du Québec Annual Meeting

Montréal, Qué.
(514) 875-8511

June 9-10, 1995 Nova Scotia Dental Association Annual Meeting

Digby, N.S.
Contact: Mr. Steve Jennex
(902) 420-0088

the Jamacia Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Fla. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Fla. 33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

February 23-26: Chicago Dental Society — Midwinter Meeting to be held in Chicago, Ill. For more information contact: CDS, 401 N. Michigan Ave. Suite 300, Chicago, Ill 60611-4205, U.S.A.

February 24-25: American Academy of Fixed Prosthodontics meeting to be held in Chicago, Ill. For more information contact: Dr. William Nequette, 14201 W. Greenfield Ave., New Berlin, Wis. 53151-1697, U.S.A.

February 26 - March 5: Virgin Island Dental Association Convention. For convention pre-registration and group travel arrangements please contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

December/Décembre 1994

December 25-January 1: Alpha Omega International Dental Fraternity's Annual Convention to be held at the Marriott Eaton Centre Hotel in Toronto, Ont. For information contact: Sheila Guston, Executive Director, 347 Fifth Ave., #703 New York, N.Y. 10016. Tel: (212) 683-4155 or Fax: (212) 683-0027.

January/Janvier 1995

January 19-22: 20th Yankee Dental Congress to be held in Boston, Mass. For more information contact: Dr. Shepard S. Goldstein, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Mass. 01760-4144, U.S.A. or call (508) 651-7511.

February/Février 1995

February 4-11: 34th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane St., London, SW1X 9SW, U.K. Tel: 44 (0) 71 235 0788 or Fax: 44 (0) 71 235 0767.

February 6-12: Barbados Dental Association — 7th Annual International Mid-Winter Meeting 1995 Theme: Emerging Technologies in Dentistry — Implants Endodontics. For information contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

February 15-19: The Jamacia Dental Association's 31st National Convention will be held at

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVIth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst N.S.W. 2010. Tel: 61-2-331 6920 or Fax: 61-2-331 7296.

March 2-4: Academy of Osseointegration's 10th Annual Meeting to be held in Chicago, Ill. For more information contact: Acad-

emy of Osseointegration, 401 N. Michigan Ave., Chicago, Ill., 60611-4267, U.S.A.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieäisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

March 16-18: Academy of Sports Dentistry in Anaheim, Calif. For information contact Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel.: (905) 823-2008 or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont., L8R 3M2. Tel.: (905) 577-0770 or Fax (905) 577-0721.

March 18-22: 28th Australian Dental Congress to be held in Hobart, Australia. For information contact: Ms. Beth Pocock or Ms. Sally Philpott, Mures Convention Management, Victoria Dock, Hobart, Tas 7000. Tel: (002) 312 121 or Fax: (002) 344 464.

March 25 - April 1: 35th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane Street, London SW1X 9SW, U.K. Tel: 44 (0) 71-235-0788 or Fax: 44 (0) 71-235 0767.

April/Avril 1995

April 7-8: Southern Ontario Surgical Orthodontic Study Goup meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel: (519) 258-2632 or Fax: (519) 258-2637.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AAACD Executive Office at 1-

800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June/Juin 1995

June 1-3: BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 8-11: 5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 12-15: 1995 Rontgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 28 - July 1: International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3: XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary

August/Août 1995

August 23-26: XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel: (201) 783-6300 or Fax: (201) 783-1175.

October/Octobre 1995

October 4-8: 136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave, Chicago, Ill., 60611, U.S.A. Tel: (312) 440-2658 or Fax: (312) 440-2707.

October 31 - November 4: Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

November/Novembre 1995

November 15-17: Annual Congress of the Swedish Dental Society to be held in Stockholm, Sweden. For more information contact: Charlotte Nackstad, Swedish Dental Society, Box 5843, S-102 48 Stockholm, Sweden. Tel: (8) 666 15 00 or Fax: (8) 662 58 42.

December/Décembre 1995

December 25 - January 1, 1996: Alpha Omega International Dental Fraternity — Annual Convention to be held in Tarpon Springs, Florida. For more information contact Sheila Guston, executive director, 347 Fifth Ave., #703, New York, NY 10016, USA. Tel: (212) 683-4155 or Fax: (212) 683-0027.



November/
Novembre
1994
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Continuing Education 1994 — 1995

University of Toronto

December 9: Endodontic Surgery Review

Presented by Dr. J. Edelson and the Endodontic Department Staff.

January 14: Pharmacology Review

This course will be presented by Dr. D. Haas and Dr. H. Grad.

February 17-18: Preventive Dentistry Forum — Home Care Products and Office Procedures for the Preventive-oriented Dental Practice

Presented by the University of Toronto's Faculty of Dentistry Preventive Dentistry Department under the direction of Dr. Hardy Limeback

February 24-25: Success with New Treatment Modalities in Restorative Dentistry

This course will be presented by Drs. Dorothy McComb, James Brown and Laura Tam. Guest speaker: Dr. Izchak Barzilay.

For information contact:

Office of Continuing Dental Education
Faculty of Dentistry
University of Toronto
124 Edward St.
Toronto, Ont.
M5G 1G6
Tel: (416) 979-4902 Ext. 4503
Fax: (416) 979-4936

Dalhousie University

December 3: Incorporating Periodontics Into General Practice.

Presented by Dr. William J. Killoy

December 10: Making It Work (Comprehensive clinical application of advanced restorative techniques)

Presentation by Drs. Jack Gerrow and Dan Macintosh.

For information contact:

Continuing Dental Education
Faculty of Dentistry
Dalhousie University
Halifax, N.S.
B3H 3J5
Tel: (902) 494-1674
Fax: (902) 494-2527

Edmonton & District Dental Society

January 20: Endodontics

Speaker: Dr. John West

February 24: G.P. Oral Surgery

Speaker: Dr. Karl Koerner

March 17: Technology/Marketing

Speaker: Mr. Imtiaz Manji

For information contact:

Edmonton & District
Dental Society
P.O. Box 41124
Edmonton, Alta.
T6J 6M7
Tel/Fax: (403) 463-1558

University of Western Ontario

December 1-3: Crown and Bridge Back to Basics — Current Concepts and Future Trends.

December 2: Basic Rescuer C.P.R. New and Re-Certification — Infant, child and adult techniques.

For information contact:

The University of Western Ontario
Continuing Dental Education
Faculty of Dentistry, C.D.E.
Room 1003, Dental Sciences
Building
London, Ont.
N6A 5C1

University of Manitoba

December 3: Alpha Omega Memorial Lecture — Predictably Successful Endodontics

Dr. Donald Yu, lecturer

February 17-18: Level II Complexity Basic Molar Root Canal Therapy

Lecture and laboratory participation with Drs. W. Christie, M. Peikoff, W. Acheson & H. Fogel

February 25: Medical History: Assessing the Risks of Treatment

Lecture by Ms. Eunice Edgington

March 4: The Practical Application of the Carbon Dioxide Laser in Restorative Dentistry

Lecture and laboratory demonstration by Dr. Cary Ganz

March 16-18: An Oral Surgery Update for the General Practitioner

Lecture & clinical demonstration by Drs. J. Curran & M. Mohen

For information contact:

University of Manitoba
Continuing Dental Education
780 Bannatyne Ave.
Winnipeg, Man.
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JOURNAL

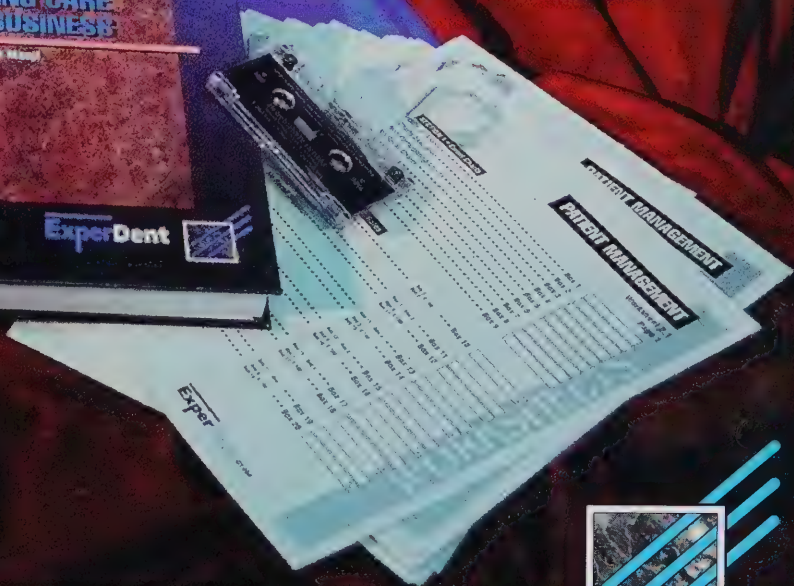
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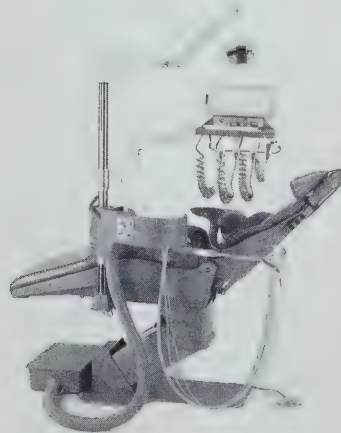
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Septanest N

(articaine hydrochloride 4% with 1:200,000 epinephrine)

Septanest SP

(articaine hydrochloride 4% with 1:100,000 epinephrine)

LOCAL ANESTHETIC FOR DENTAL USE.

Clinical Pharmacology

Septanest (articaine hydrochloride) is a local anesthetic that has the reversible effect of blocking the conduction of painful sensations. **Septanest** decreases nerve conduction by diminishing the sodium ion influx during the action potential period.

Indications

Septanest (articaine hydrochloride) is indicated for infiltration anesthesia and nerve block anesthesia in clinical dentistry.

Contraindications

Septanest (articaine hydrochloride) is contraindicated in patients with known allergies to dental anesthetics. **Septanest** is also contraindicated in patients with sepsis near the proposed injection site, severe shock, paroxysmal tachycardia, frequent arrhythmia, neurological disease, severe hypertension or in patients with asthma who may have bronchospastic allergic reactions induced by sulfites. Since **Septanest** contains epinephrine the caution required of any vasoconstrictor drug is in order.

Warnings

Septanest, along with other local anesthetics, is capable of producing methemoglobinemia. The clinical signs of methemoglobinemia are cyanosis of the nail beds and lips, fatigue and weakness. If methemoglobinemia does not respond to administration of oxygen, administration of methylene blue intravenously 1 to 2 mg/kg body weight over a 5 minute period is recommended.

Precautions

Each time a local anesthetic is used, anti-convulsant medicines (benzodiazepines or barbiturates which can be injected), myorelaxants, atropine and vasopressors, resuscitating equipment (in particular a source of oxygen) enabling artificial ventilation, should be available. The safety and effectiveness of local anesthetics depend upon proper dosage, correct technique, adequate precautions, and readiness for emergencies in persons with known or suspected drug allergies or sensitivities to amide-type local anesthetics. **Septanest** should be given cautiously.

Patients with Special Diseases and Conditions

In patients with peripheral vascular disease or injection into areas with limited blood supply, the use of a local anesthetic containing a vasoconstrictor should be made with caution.

Due to the presence of epinephrine, **Septanest** is not advised for diabetic subjects.

Use in Pregnancy

Safe use of local anesthetics during pregnancy prior to labor has not been established with respect to adverse effects on fetal development. Careful consideration should be given before administering these drugs in pregnant women.

Adverse Reactions

Reactions to **Septanest** (articaine hydrochloride) are characteristic of amide-type local anesthetics.

Adverse reactions of this group of drugs are generally dose-related and may result from high plasma concentrations of anesthetic caused by inadvertent intravascular administration, overdosage, or rapid absorption from the injection site as well as reduced patient tolerance, idiosyncrasy, or hypersensitivity.

Dosage And Administration

Septanest N (articaine 4% with 1:200,000 epinephrine)
Septanest SP (articaine 4% with 1:100,000 epinephrine)

As with all local anesthetics the dosage varies and depends upon the area to be anesthetized, the vascularity of the tissue, the number of numeral segments to be blocked, individual tolerance and the technique of anesthesia.

Do not exceed the equivalent of 7 mg/kg articaine hydrochloride body weight which corresponds, for a subject weighing 60 kg, to 6 standard 1.7 ml cartridges. The lowest dosage needed to provide effective anesthesia should be administered.

Septanest N and Septanest SP

Procedure	Volume (ml)	Total Dose (mg)
Infiltration	0.5-2.5	20-100
Nerve Block	0.5-3.4	20-136
Oral Surgery	1.0-5.1	40-204

Children

For **Septanest N** and **Septanest SP** use in children under 4 years of age is not recommended. The quantity to be injected should be determined by the age of the child and the size of the operation. Do not exceed the equivalent of 7 mg articaine hydrochloride per kilogram of body weight.

Presentation

Septanest N: articaine hydrochloride 4% with epinephrine 1:200,000 is available in 1.7 ml glass cartridges, can of 50 cartridges.

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CONTRAINDICATIONS: Hypersensitivity to the drug. The levels of spiramycin attained in the CSF are much lower than those in the blood and are too low to be clinically useful. Therefore, spiramycin must not be used in patients with meningitis. **PRECAUTIONS:** Administer antibiotics, including spiramycin cautiously to any patient who has demonstrated some form of allergy, particularly to drugs. The possibility of superinfection caused by overgrowth of nonsusceptible organisms should be kept in mind during prolonged or repeated therapy. If superinfection occurs, discontinue the drug and take appropriate measures. **Pregnancy:** Safety of this product for use during pregnancy has not been established. **ADVERSE EFFECTS:** Spiramycin has a low toxicity and rarely produces serious adverse effects; these include epigastric pain and abdominal discomfort, nausea, vomiting, diarrhea and skin sensitization. **OVERDOSE: Symptoms:** No case of accidental overdosage has been reported. In oral doses over 4 g/day, abdominal discomfort, nausea or diarrhea may occur. **TREATMENT:** No specific treatment has been proposed. Management should be symptomatic. **DOSAGE: Adults:** 6,000,000 to 9,000,000 I.U. (4 to 6 capsules of Rovamycine '500') per 24 hours, in 2 divided doses. In severe infections, the daily dosage may be increased to 12,000,000 to 15,000,000 I.U. (8 to 10 capsules of Rovamycine '500' per day). **Gonorrhea:** 12,000,000 to 13,500,000 I.U. (8 or 9 capsules) in a single dose. **Children:** The usual daily dosage is based on 150,000 I.U./kg body weight in 2 or 3 divided doses; the following calculated dosages are given as a guide (see Table 1). Spiramycin is stable in gastric juices and

TABLE 1

Dosage in capsules of Rovamycine '250'	
Body weight	(750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycine '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycine '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

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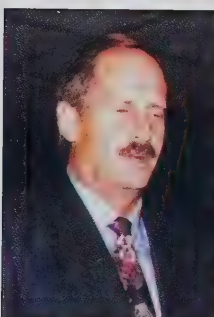
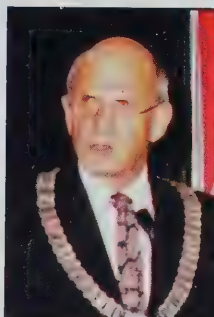
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FDI '94: Business — with pleasure



Some Congress participants pre-registered, but many registered on-site.



Opening Ceremony welcoming speeches — the shortest speeches at an FDI Congress (clockwise from upper left) — Dr. Ross, Dr. Wenn, Dr. Scramstad and Dr. Jahjah



Escorted by two R.C.M.P., Ray Wenn carries the Canadian during the Parade of Nations.

Ukrainian dancers exemplify Canada's ethnic diversity during the Opening Ceremony.



First Nations dancers begin the multicultural extravaganza launching the FDI '94 Opening Ceremony.



Famous People Players reunite Little Bo Peep with her sheep later in the Opening Ceremony.

Education, exhibits, and special events highlights



✧ Fabulous fireworks launch FDI '94 with a bang!



✧ Dr. Michael Jahjah, Dr. Ray Wenn, Dr. Ron Markey and Dr. Clive Ross open the FDI '94 exhibits.



A crowded exhibit hall; the mark of a successful convention. ➤



✧ Authentic Chinese Dragon dancers enchant diners at FDI '94's "Discover the Orient" evening.



✧ Participation in action at the FDI '94 Fun Run and Walk



Party-goers dance the night away at the FDI Ball. ➤



The entire FDI '94 team receives a standing ovation from representatives of member countries.



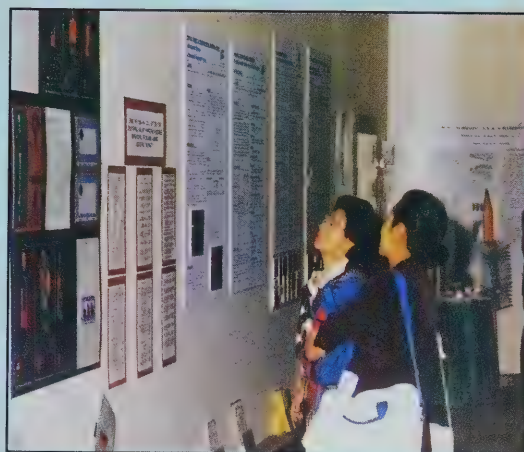
There's always room for one more (or maybe not!) as participants crowd into lecture rooms.



Deep concentration and meticulous attention are the tone for hands-on courses.

Table clinics — is there no way to stop these eager participants from learning? ➡

Poster presentations; another way to learn. ➡



➡ The winner of the Unilever Table Clinic Competition is Albert Lee from Hong Kong.



☞ Mr. Ronny Persson, President of Volvo Canada announces the winner of the Volvo 960 automobile — Dr. Eli Schwarz of Hong Kong.



☞ And the lucky winner of the Air Canada draw was — Ms. Karen Young of North Vancouver.



☞ Here it is! Mr. Hayo Maier of Aurum Ceramic/Classic announces the winner of the Harley Davidson Sportster 1200 — Dr. Stewart Wilson of Vancouver, B.C.



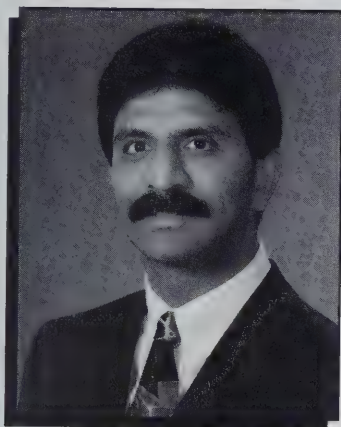
☞ Ms. Eva Carin-Tengberg, President of Nobelpharma, along with a friend, congratulates Ms. Anette Nenzen of Quesnel, B.C., winner of two airline tickets to Hong Kong for FDI '95, compliments of Nobelpharma Canada.



☞ Bon voyage! Many Congress participants used shuttle buses for various destinations.



☞ Future dental professionals check out Vancouver's hot spots!



Why Patients Leave

Imtiaz Manji, B.Sc.

Principal of ExperDent

In our highly service-oriented and competitive economy, it's refreshing to encounter dental practitioners who meticulously track their practice numbers, be it how many active patients they have or how many new patients come through the doors each month. However, these same dentists can often be found shaking their heads in dismay, wondering how a healthy patient base and new patient flow aren't matched by a full clinical schedule for themselves or their hygienists.

In focussing on the practice numbers, particularly new patient flow, these practitioners are losing sight of the prime practice nemesis: the revolving-door syndrome. For example, the team may be so busy patting itself on the back for generating 20 to 30 new patients per month that it forgets to notice that similar numbers of existing patients are creeping out the back door, charts in tow. New patient flow, like the favored child, has been given all the attention, leaving patient retention to fend (usually unsuccessfully) for itself.¹⁻³

Perceived Indifference

I recently read about a study that identified the reasons why customers/clients left an establishment or business. Though some stopped frequenting a business because they changed residences or were dissatisfied with the product/service, "perceived indifference" accounted for the bulk (a whopping

68 per cent) of the respondents' decisions to take their business elsewhere.

Unfortunately, dental practices are high-risk zones in terms of the potential for perceived indifference. Whether you keep patients waiting, miscommunicate with them about their financial obligations or fail to address their anxieties, patient dissatisfaction often finds its "home" at the dentist.

When I lecture, I often ask the audience (i.e. dentists and their team), "How many of you have patients who drive great distances to see you?" Generally, many hands are raised. But interestingly, when I ask, "How many of you have patients that left your practice because they didn't want to drive another 15 minutes?" The hands remain up.

Clearly, we can't expect patients to remain in a practice when they move far away, but for those who are still relatively nearby an extra few minutes' drive should not be enough to prompt them to switch dentists. If a practice is successful in satisfying patients and creating loyal relationships with them, this type of mobility should not adversely affect patient retention.

So why all the raised hands when I ask, "How many of you have patients that left your practice because they didn't want to drive another 15 minutes?" It's because these practices have not created value for patients. Their patients don't see the difference between them and the other practices that

may be considerably closer to their new residences. If they don't recognize the uniqueness of your practice, the decision on how to choose a dentist may come down to pure convenience, the same way consumers flock to the corner food store in their neighborhood when they run out of milk. Practices may know that they're distinct, but that's all for naught if their patients don't echo this knowledge.

Creating Value

Patients who paint all practices with the same brush may end up choosing a dentist on convenience alone. This has always struck me as an amazing thing given that our mouths are the precious focus of so much of our activity. It is the mouth that serves as the pathway to communication (beginning with our first scream at birth); it is the mouth that allows us to provide sustenance to our bodies (beginning with our mother's milk); and it is the mouth that conveys much of our affection (beginning with our first kiss). Despite such preciousness, there are people who will trust their mouths to a total stranger.

If your practice is like most others, however, you've lost patients to a "total stranger." Creating value for patients is about establishing relationships with them, relationships built on trust, caring, and respect. You seldom (if ever) hear patients praising their dentists with comments such as "my dentist has great margins," because the major-

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ity of them don't have the ability to assess the quality of the treatment they receive. (Cosmetic dentistry may be the notable exception here. Patients are likely to make quick assessments on whether they like their new smile and to equate this impression with the quality of the dentistry.)

Because most patients cannot assess the work done in their mouths, it is difficult to create value based on excellent clinical qualifications alone. Yes, you need to deliver the best dentistry possible — and to have your team reinforce this message to patients — but that's not enough. You need to communicate value in all aspects of your practice, from hiring caring staff and creating comfortable surroundings, to refining your chair-side manner and communicating effectively about financial arrangements. In other words, value is created in the areas where patients hold up their measuring sticks and tabulate the results (likely not their mouths). Consciously or not, they're processing all the experiences at (and with) your practice. In the final analysis, will you receive a superlative, good, average or unsatisfactory rating?

Value is about patients' perceptions, how they view the relationship with your practice. If they view your practice as unparalleled, it will require a significant reason — such as a distant relocation — to get them to switch dentists. Otherwise, they'll continue to come back to your practice as long as the perception of value is there. This type of excellent patient retention should be the occasion that warrants the team patting itself on the back.

Reversing Lost Opportunities

Often, the team loses sight of the opportunities for value creation because they're caught up in the day-to-day running of the dental practice. Here are a few ideas:

Get Your Kudos in Writing

A patient comes out of the operatory and states to your front desk personnel, "This was a wonderful visit. I'm so happy with the work

the doctor did." As the patient can't assess the dentistry provided, he or she is really commenting favorably on the way the dentistry was delivered. The usual staff response is to smile and thank the patient for such praise. But this is an opportunity to say, "You know what, the doctor would appreciate hearing that directly from you. Would you mind putting some of your thoughts down in writing?" This does two things: reaffirms the satisfaction for the patient (which is important in generating referrals); and, once patient compliments are entered in a practice portfolio, gives other patients a chance to read about positive experiences.

Communicate the Importance of Hygiene

It's amazing that some practices still don't understand the importance of communicating with patients about continuing care. Or, even if they understand that appointing ahead is the ideal, they may neglect to do it or will attempt to do it without also educating patients. The end result is that they're left wondering why patients might question the policy of appointing ahead or resist it altogether. The solution is simple. Make sure that your team is focussed on patient participation in your continuing care program and that they have polished verbal skills to ensure it happens. Create accountability within your team so that each member understands his or her role and can act accordingly to reduce slippage.⁴

Solicit Feedback

As dentistry increasingly moves toward an interactive model between dentist and patient, it is not only important to have patients participate in treatment decisions, but also to rely on them as a compass to guide practice directions and policies. Near silence or "no news is good news" is not what you're after, as it may represent the tiptoeing of your patients out the back door. Without a climate of open communication, many patients may not be inclined to criticize the practice to those who can address their concerns — the dental team. The fallout can be tremen-

dous: lost patients and the wrong kind of word-of-mouth advertising.

Patient surveys and suggestion boxes not only give you valuable information (and are "safe" for patients when done anonymously), they send a symbolic message to patients that your practice is ready to listen. Whether patients want to let you know that your practice calendar doesn't suit them, that your new patient experience is confusing, or that your financial policies are arbitrary, rely on them to be the compass to guide your direction.

Conclusion

To understand the essence of value creation, let's consider the establishment and nurturing of a successful relationship in another discretionary service, haircutting. If you consider the effort in time, energy and money that I put out to get a haircut, you'll see my point.

Every four to six weeks, I drive 45 minutes, brave horrendous downtown Vancouver traffic and pay exorbitant parking fees to go to the hair stylist of my choice. It's nothing short of a challenge to get there, but after each visit you'll find that I'm a happy, satisfied client. I could stop at one of the several salons I pass on the way but I never do. It's because I see the value in my stylist's hairdressing and customer service skills. The value is so instilled that I go to great lengths to "plan my life" around my haircuts so that I'm not forced to have a "total stranger" cutting my hair when I'm out of town on business. Though this appointing ahead for a haircut elicits some laughter from my family and staff, it's a textbook example of what loyalty/relationship marketing is all about.

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WHY DO PATIENTS LEAVE ?

If you ask dental teams why patients leave, they often say that "moving" is the only reason patients cite for a decision to exit the practice. But it's not the only reason; *it's just the only reason that patients feel comfortable mentioning.* The following includes some of the other top reasons why patients leave a dental practice:

- Rude, unhelpful or indifferent staff. (This includes the dentist's behavior, but for some reason patients are less tolerant of the rest of the team.)
- Inconvenient hours. (A patient may change jobs and find that their schedule no longer meshes with the practice's.)
- The experience of pain. (This is not tolerated well, particularly in the hygiene department.)
- Unclear financial arrangements. (Patients don't like surprises, particularly when it comes to money. When practices fail to communicate financial information prior to the commencement of treatment, they may find that patients leave for the practice down the street, which is likely adhering to the same fee guide. The difference: the new practice may have more payment options and communicates financial information.)
- Don't perceive value for the expense. (In this case, patients may understand their financial obligations, but because they don't understand the value of the treatment they see the cost as excessive.)
- Loss of confidence. (This can occur when patients perceive disorganization in the practice.)
- No compelling reason to stay. (The dental team doesn't give patients enough reasons to remain in the practice, and though they may not have annoyed the patient, they've failed to establish a relationship.)
- No reason to come back. (A lack of preventive education often leaves patients feeling that the dental practice is just a treadmill with never-ending valueless treatment.)
- Appointments that don't start on time. (Patients don't like to be kept waiting. Whether this prompts patients to leave is a function of the length and the frequency of the waits and the individual patient's threshold level.)
- A lack of caring. (This can manifest itself in many ways, from not returning phone calls to refusing to tend to patient emergencies.)
- Excessive staff turnover. (Whether it's hygienists, assistants, associates or administrative staff, it's hard to establish relationships with your patients when the faces on the dental team keep changing. You can't expect to create patient loyalty if you don't have staff loyalty.)

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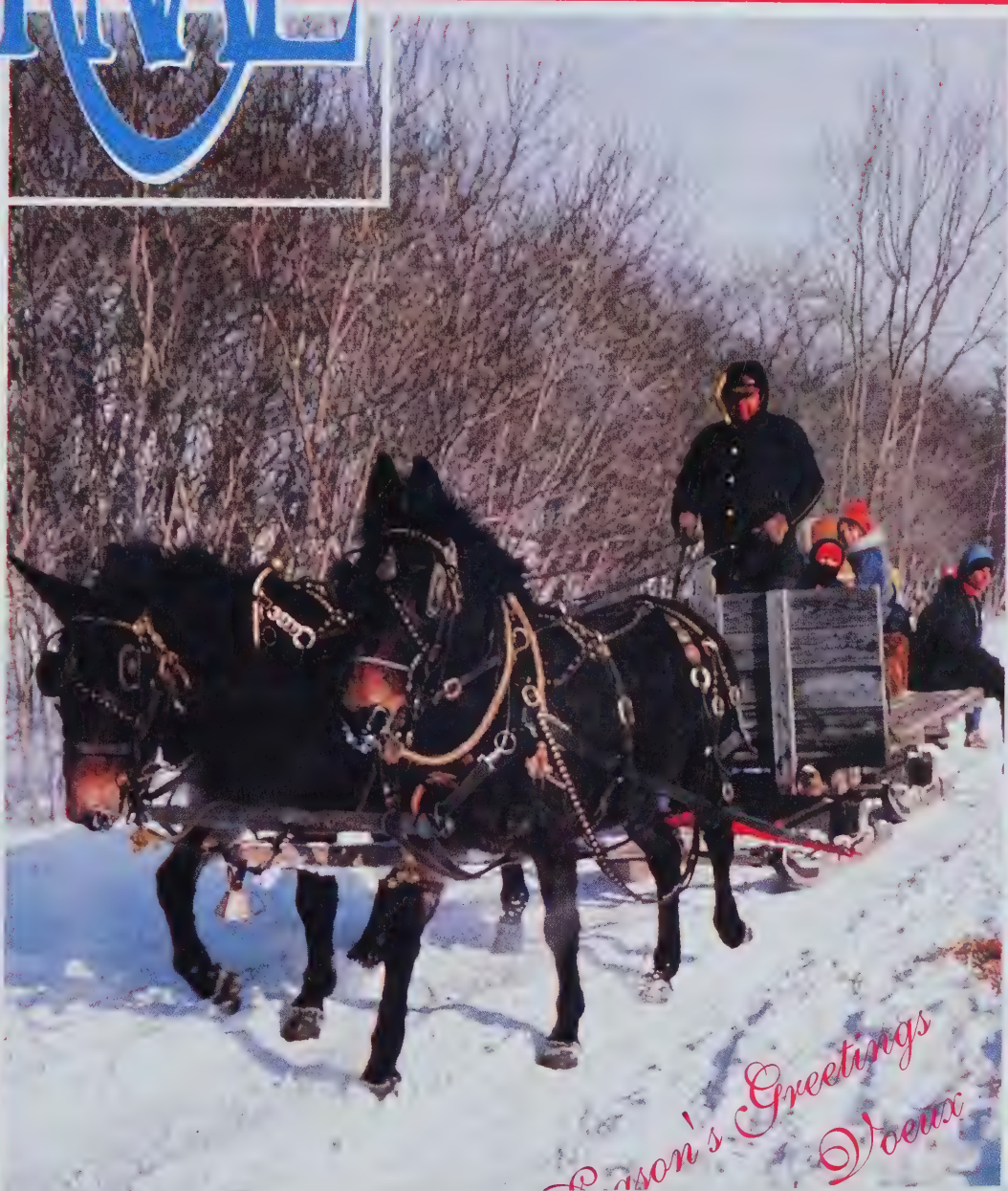
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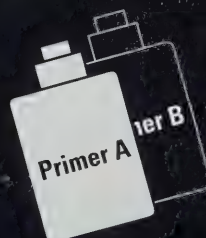
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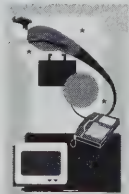
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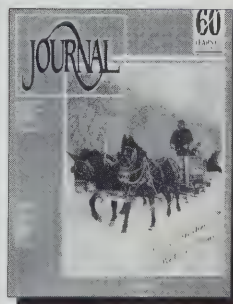
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Cover: Taking a sleigh ride during Manitoba's "Festival du Voyageur" (Photograph Courtesy of Travel Manitoba).

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ANNOUNCEMENTS

National Highlights

January 27-28, 1995 Manitoba Dental Association Meeting

Contact: Mr. Ross McIntyre
(204) 453-0055

March 2-4, 1995 B.C. Dental Meeting

Vancouver, B.C.
Contact: Marilynne Webster
(604) 736-3645

April 7-8, 1995 Interim Meeting of the CDA Board of Governors

1-800-267-6354

May 11-13, 1995 Newfoundland Dental Association Meeting

St. John's, Nfld.
(709) 579-2362

May 11-13, 1995 ODA Annual Spring Meeting

Toronto, Ont.
(416) 922-3900 ext. 346

May 23-28, 1995 Alberta Dental Association Annual Meeting

Jasper, Alta.

Contact: Dr. Dave Scott
(403) 492-2014

May 26-27, 1995 New Brunswick Dental Society Annual Meeting

Moncton, New Brunswick
(506) 452-8575

May 27-31, 1995 24^e Congrès annuel de l'Ordre des dentistes du Québec — Les Journées dentaires du Québec

Montréal, Qué.
Contact: Nicole Pagé
or Ginette Boutin
(514) 875-8511
Fax: (514) 875-1561

May 30, 1995 Ordre des Dentistes du Québec Annual Meeting

Montréal, Qué.
(514) 875-8511

June 9-10, 1995 Nova Scotia Dental Association Annual Meeting

Digby, N.S.
Contact: Mr. Steve Jennex
(902) 420-0088

January/Janvier 1995

January 19-22: 20th Yankee Dental Congress to be held in Boston, Mass. For more information contact: Dr. Shepard S. Goldstein, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Mass. 01760-4144, U.S.A. or call (508) 651-7511.

February/Février 1995

February 4-11: 34th International Alpine Dental Conference to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane St., London, SW1X 9SW, U.K. Tel: 44 (0) 71 235 0788 or Fax: 44 (0) 71 235 0767.

February 6-12: Barbados Dental Association — 7th Annual International Mid-Winter Meeting 1995 Theme: Emerging Technologies in Dentistry — Implants Endodontics. For information contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel: (519) 657-4306 (evenings).

February 15-19: The Jamacia Dental Association's 31st National Convention will be held at the Jamacia Grande, Ocho Rios. For more information, contact Aurora Travel Services at 1-800-451-5421.

February 16-18: 25th Annual Miami Winter Meeting and Dental Expo in Miami, Fla. For information contact: East Coast District Dental Society, 420 South Dixie Highway, 2-E, Coral Gables, Fla.

33146. Tel: (305) 667-3647 or Fax: (305) 665-7059. From Canada call 1-800-344-5860.

February 23-26: Chicago Dental Society — Midwinter Meeting to be held in Chicago, Ill. For more information contact: CDS, 401 N. Michigan Ave. Suite 300, Chicago, Ill 60611-4205, U.S.A.

February 24-25: American Academy of Fixed Prosthodontics meeting to be held in Chicago, Ill. For more information contact: Dr. William Nequette, 14201 W. Greenfield Ave., New Berlin, Wis. 53151-1697, U.S.A.

February 26 - March 5: Virgin Island Dental Association Convention. For convention pre-registration and group travel arrangements please contact: Lynne Brandon, 85 Lonsdale Dr., London, Ont. N6G 1T4. Tel.: (519) 657-4306 (evenings).

March/Mars 1995

March 1-4: Australian & New Zealand Association of Oral and Maxillofacial Surgeons, XVth Biennial Clinical Conference, Towards 2000: Form & Function, being held at the Park Grand Hotel in Sydney, Australia. For information contact: ANZAOMS Conference 1995, Professional Centre of Australia, Private Bag No 1, Darlinghurst N.S.W. 2010. Tel: 61-2-331 6920 or Fax: 61-2-331 7296.

March 2-4: Academy of Osseointegration's 10th Annual Meeting to be held in Chicago, Ill. For more information contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Ill., 60611-4267, U.S.A.

March 13-19: The Annual Dental Meeting of the Finnish Dental Society to be held in Helsinki, Finland. For information contact: Ms. Taru Ohtola, The Finnish Dental Society, Rautatieläisenkatu 6, SF-00520, Helsinki, Finland. Tel: (358) 0-1502-418 or Fax: (358) 0-3-317.

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Continuing Education 1994 — 1995

University of Toronto

January 14: Pharmacology Review

This course will be presented by Dr. D. Haas and Dr. H. Grad.

February 17-18: Preventive Dentistry Forum — Home Care Products and Office Procedures for the Preventive-Oriented Dental Practice

Presented by the University of Toronto's Faculty of Dentistry Preventive Dentistry Department under the direction of Dr. Hardy Limeback

February 24-25: Success with New Treatment Modalities in Restorative Dentistry

This course will be presented by Drs. Dorothy McComb, James Brown and Laura Tam. Guest speaker: Dr. Izchak Barzilay.

For information contact:

Office of Continuing Dental Education
Faculty of Dentistry
University of Toronto

124 Edward St.
Toronto, Ont.
M5G 1G6
Tel: (416) 979-4902, Ext. 4503
Fax: (416) 979-4936

University of Manitoba

February 17-18: Level II Complexity Basic Molar Root Canal Therapy

Lecture and laboratory participation with Drs. W. Christie, M. Peikoff, W. Acheson & H. Fogel

February 25: Medical History: Assessing the Risks of Treatment

Lecture by Ms. Eunice Edgington

March 4: The Practical Application of the Carbon Dioxide Laser in Restorative Dentistry

Lecture and laboratory demonstration by Dr. Cary Ganz

March 16-18: An Oral Surgery Update for the General Practitioner

Lecture & clinical demonstration by Drs. J. Curran & M. Mohen

For information contact:

University of Manitoba
Continuing Dental Education
780 Bannatyne Ave.
Winnipeg, Man.
R3E 0W2

Edmonton & District Dental Society

January 20: Endodontics

Speaker: Dr. John West

February 24: G.P. Oral Surgery

Speaker: Dr. Karl Koerner

March 17: Technology/ Marketing

Speaker: Mr. Imtiaz Manji

For information contact:

Edmonton & District
Dental Society
P.O. Box 41124
Edmonton, Alta.
T6J 6M7
Tel/Fax: (403) 463-1558

March 16-18: Academy of Sports Dentistry in Anaheim, Calif.

For information contact Dr. Art Wood, 1553 Randor Dr., Mississauga, Ont., L5J 3C6. Tel.: (905) 823-2008 or Dr. Frank Stechey, 202-151 York Blvd., Hamilton, Ont., L8R 3M2. Tel.: (905) 577-0770 or Fax (905) 577-0721.

March 18-22: 28th Australian Dental Congress to be held in Hobart, Australia.

For information contact: Ms. Beth Pocock or Ms. Sally Philpott, Mures Convention Management, Victoria Dock, Hobart, Tas 7000. Tel: (002) 312 121 or Fax: (002) 344 464.

March 25 - April 1: 35th International Alpine Dental Conference

to be held in Courchevel, France. For more information contact: The International Dental Foundation, 53 Sloane Street, London SW1X 9SW, U.K. Tel: 44 (0) 71-235-0788 or Fax: 44 (0) 71-235 0767.

April/Avril 1995

April 7-8: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ont. For details contact Dr. Jeff Berger. Tel: (519) 258-2632 or Fax: (519) 258-2637.

May/Mai 1995

May 3-8: American Academy of Cosmetic Dentistry, 11th Annual Scientific Session to be held in Orlando, Fla. at the Hyatt Regency Grand Cypress Resort. For more information contact: AAACD Executive Office at 1-800-543-9220 or write to: AACD, 270 Corporate Dr., Madison, Wis. 53714, U.S.A.

May 20-24: European Begg Society of Orthodontics, 17th Congress to be held in Chester, U.K. For information contact Geoff

Budd, Brookside, 35 Warwick Park, Tunbridge Wells, Kent. TN2 5TA U.K.

June/Juin 1995

June 1-3: BDA Annual Conference "Success in Practice" to be held in Birmingham, England. For more information contact: Linda Wallace, British Dental Association, 64 Wimpole St., London W1M 8AL, England. Tel: (71) 935 0875 or Fax: (71) 487 5232.

June 8-11: 5th International Symposium on Periodontics and Restorative Dentistry to be held in Boston, Mass. For more information contact: Quintessence Publishing Co. Inc., 551 North Kimberly Dr., Carol Stream, Ill. 60188. Fax: (708) 682-3288.

June 12-15: 1995 Roentgen Centenary Congress and Historical Exhibition to be held in Birmingham, U.K. For more information

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contact: Miss V. Whitehead, Conference Office, British Institute of Radiology, 36 Portland Place, London W1N 4AT, U.K.

June 28 - July 1: International Association for Dental Research — 73rd General Session and Exhibition to be held in Singapore. For more information contact: E. Gwynn Breckenridge, Director of Scientific Meetings, 1111 Fourteenth Street N.W., Suite 1000, Washington, D.C. 20005, U.S.A. Tel: (202) 898-1050 or Fax: (202) 789-1033.

June 29 - July 3: XII International Congress on Oral & Maxillofacial Surgery to be held in Budapest, Hungary. For more information contact: Prof. G. Szabo, Dept. of Oral & Maxillofacial Surgery, Semmelweis University of Medicine, H-Budapest VII, Maria U. 52, Hungary

August/Août 1995

August 23-26: XV World Congress — International Congress of Oral Implantologists to be held in San Francisco, Calif. For more information contact: R. Craig Johnson, 248 Lorraine Ave., Upper Montclair, N.J. 07043, U.S.A. Tel: (201) 783-6300 or Fax: (201) 783-1175.

October/Octobre 1995

October 4-8: 136th Annual Session of the American Dental Association to be held in Las Vegas, Nev. For more information contact: American Dental Association, 211 E. Chicago Ave, Chicago, Ill., 60611, U.S.A. Tel: (312) 440-2658 or Fax: (312) 440-2707.

October 31 - November 4: Centenary Congress — 28th International Dental Meeting to be held in Buenos Aires, Argentina and sponsored by the Asociación Odontológica Argentina. For more information contact: Dr. Guillermo Pisarenko, president, Junin 959, (1113) Buenos Aires, Argentina. Tel: (1) 961-6141 or Fax: (1) 961-1110.

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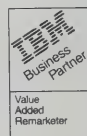
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WHEN IT COMES TO SERVING DENTISTS CDSPI TAKES THE CAKE



It's our 35th anniversary — so we thought we'd serve you a piece of cake. Trouble is, CDSPI administers financial programs used by more than 13,000 dentists across Canada. And filling an order for that many slices is *not* a piece of cake.

Instead, we'll just continue serving you with the best insurance and investment programs available to the dental profession.

Designed by dentists for dentists, *your* programs really are among the most comprehensive offered to any professional group in Canada. It's no wonder — for 35 years we've been introducing and enhancing superior financial programs on behalf of the CDA and co-sponsoring provincial associations.

This year the tradition continues. We're celebrating with improved insurance plans —

almost all are enhanced and many have significantly *lower* premiums than in 1993. Plus we've introduced an exceptional new product: the CDA RIF (Canadian Dental Association Retirement Income Fund).

We're also maintaining another tradition — understanding your needs. Over the years our top priority has been finding out what dentists want ... responding with the best possible solutions ... and — most importantly — establishing a bond of trust by going the extra mile to serve you best.

Our dedication to you and our commitment to making ongoing improvements will continue this year — and in the future. Which means we'll serve you even better in the coming years. And *that* is the icing on the cake.



Canadian Dental Service Plans Inc.
100 Consilium Place, Suite 710
Scarborough, Ontario M1H 3G8

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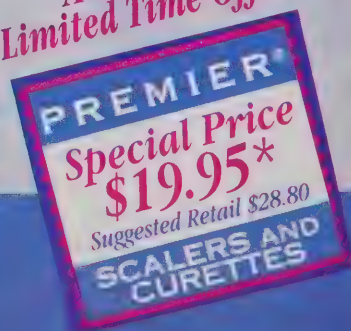
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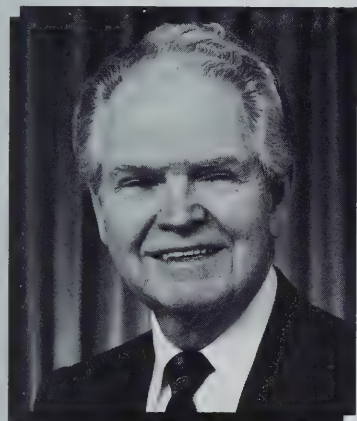


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EDITORIAL

OUT OF DARKNESS COMES LIGHT — AND THANKS



Dr. P. Ralph Crawford,
Editor

The winter solstice — technically the point at which the sun is farthest from the equator, but better known as the shortest day of the year — has always held a certain fascination.

Imagine what went on in the minds of our ancestors, millions of years ago, as the days became shorter and shorter with the approaching winter solstice. A superstitious bunch, it's likely that they faced each one with a certain amount of fear and trepidation, wondering if the light would return, or if the days would instead grow progressively darker, leaving them to spend the rest of their lives in total darkness.

Not surprisingly, throughout the centuries many religions and beliefs have been centred around a worship of the sun — the giver of light and warmth. Many thousands of years ago, for example, the god Mithra was associated with the sun and the bright sky. Worshipped first by the ancient Aryans, the belief in Mithra was later carried to India and Persia, and then to Italy. Ultimately, this god became a favorite of Roman soldiers, and even in the third century AD Mithra still rivalled Christianity

for the spiritual allegiance of the Roman world.

The ancient Romans also worshipped Saturnus, the god of seed-corn and sowing. An annual festival to Saturnus, the Saturnalia, was originally held on December 19, but with time it grew into a seven-day celebration extending over the full period of the winter solstice. During Saturnalia, all Roman business — public and private — came to a standstill. It was a time of great festivity and the exchange of presents.

Under the Roman calendar, the new year — with all its opportunities for renewed hope, commitment and resolution — followed shortly after the winter solstice. Actually, the Romans dedicated the first month of their new year to Janus, the god of gates and new beginnings. Janus had two faces, one that looked to the front and one that looked to the back. This allowed him to envision not only what lay ahead, but also to contemplate on what had happened in the past.

For centuries, scholars have debated the actual date of Christ's birth. It wasn't until the middle of the fourth century AD that Pope Julius I made it official. And it was no coincidence that December 25 was the date selected. Placing Christ's birth at about the same time as an existing — and extremely popular — mid-winter festival was a practical way for the early church to win new converts.

Whatever religion, whatever faith, the tradition of celebrating during the period of the winter solstice makes ultimate sense. The solstice was, and is, a sign that the world is not coming to an end, and that the sun, in all its glory, will continue to shine — at least until the summer solstice reverses its course six months later.

Henry Ward Beecher, the 19th century American clergyman, is reported to have presented this parable: "If one should give me a dish of sand and tell me there were particles of iron in it, I might look for them with my eyes, and poke through the sand with my clumsy fingers, and still never be able to detect even the slightest amount of the metal. But give me a magnet and let me sweep it through the

sand, how quickly the fragments of iron would be attracted to that invisible force. The unthankful heart, like a finger in sand, discovers no mercies and attracts no compassion. But a thankful heart, as sure as the magnet sweeping through sand, will attract every day some heavenly blessing."

The moral of Beecher's parable is that a thankful heart attracts its own reward. In a country like Canada, and as members of a profession like dentistry, we have much to be grateful for. And isn't this the best time of the year to give thanks for all that we have and all that we have not?

In the grand scheme of things, Canada is one of the best places on this earth to live. To be sure, on a cold December day, with the winter solstice fast approaching, many of us bemoan the fact that the sun shines brighter and longer in warmer climes to the south. But we then reflect that, unlike so many other people in this world, we live in a country where war is a distant memory, where there is no mass starvation, and where people enjoy freedom of speech and religion.

Not that we can't or shouldn't hope for even more than we have now. Can you imagine an existence where it seemed that life couldn't get any better?

As dentists, we have consistently been among the most advantaged people within our communities. We still maintain the autonomy of our education, the scope of our practice and the licensure of our members. But like everyone else in this country, the opportunity exists for us to achieve unmet aspirations.

For countless centuries, billions of men and women before us have looked to the heavens at this time of the year to find a purpose to live, to give thanks for what they had, and to achieve courage to face the coming days. Can we do any less?

"If the only prayer you say in your entire life is 'Thank You' that will suffice." (Meister Eckhart 1260-1328)

P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association

JOURNAL

December/
Décembre
1994
Vol. 60
No. 12



Dr. Richard Rayman
Willowdale, Ontario



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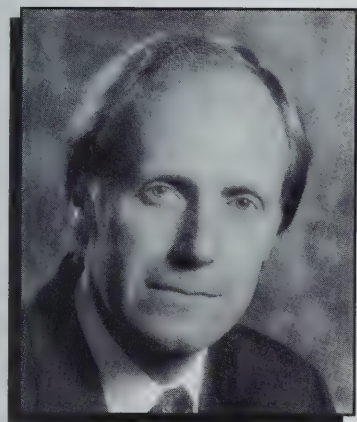


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PRESIDENT'S COLUMN

INFORMED CONSENT



Dr. Bryun Sigfstead,
President

If Forest Gump had been a dentist, chances are his Momma would have advised him to walk around in his patients' shoes for a while and take a good look back at himself. By seeing himself through their eyes, he'd have a pretty good idea of where he'd been, where he was headed, and how he'd done along the way.

It would have been good advice, too. As dentists, it is part of our professional responsibility to regularly evaluate our performance. In effect, we have to look back at ourselves through our patients' eyes, and then ask ourselves a few simple questions: If I was a patient, would I be totally satisfied with my dental visit? Would I feel good when I left the dental office? Would I like what I heard and saw when I was there? Would I like the way I was treated by the dentist and his or her staff? And, perhaps most importantly, was I fully informed about the need for treatment, the various treatment options available, and the possible outcomes of treatment?

It's so, so easy to avoid this type of self assessment. To assume that because your patients keep coming back, then they must be completely happy with the service you've provided on their behalf.

To equate this seeming acquiescence with treatment acceptance, without having fully informed the patient about all the available treatment options and without having obtained their signed or understood informed consent.

As dental professionals, a whole myriad of treatment options are available to us each time we formulate a treatment plan for one of our patients. But while various schools of thought and other influences may affect our treatment decisions, in the final analysis there can be only one pervading factor — the well-being of our patients.

This isn't a new concept. All of us know that different criteria may apply in different situations, and that different treatment options may provide the best solution for different patients. We have been taught to weigh all the facts, balance them against the criteria that apply, and make treatment decisions that provide the best result to each patient based on the existing circumstances.

Unfortunately, despite everything we've been taught, the guiding influence of our dental associations and licensing bodies, and the existence of a professional code of ethics, there are some dentists who knowingly overtreat or undertreat their patients.

Dentistry, as CDA's *Code of Ethics* states so well, "is a profession in part because the decisions of its members involve moral choices. Every dentist makes decisions that involve choices between conflicting values while providing care for his or her patients."

The combination of moral choices and conflicting values sometimes leads to differences of opinion and variations in the way dentists approach patient treatment. This is normal and justifiable — so long as each dentist bases his or her treatment decisions solely on the best interests of the patient. It's quite reasonable to suggest that two different dentists could examine the same patient on the same day and come up with two different treatment plans. It's also possible that a third dentist could evaluate the treatment plans developed by these two dentists, and take the

view that one proposed to undertreat and the other to overtreat the patient.

What is unreasonable and unjustifiable is when dentists knowingly overtreat patients strictly for financial gain. This type of activity not only tarnishes dentistry's image in the eyes of the public, it also creates an incentive for third-party providers to restrict the level of basic services covered under both public and private dental plans, or to demand prior approval for certain procedures. Both the patients and the profession are the ultimate losers.

Although a small minority of dentists engage in this activity, concerns about blatant overtreatment are already having serious repercussions. Veterans Affairs Canada, for example, recently implemented a new pre-approval requirement for patients whose annual treatment costs surpass a predetermined limit. These patients may now experience unnecessary delays, or be forced to pay for desired treatment out of their own pockets. The net result is that a few unscrupulous dentists have done unjustifiable harm to both their patients and their profession.

For most dentists, fortunately, the issue of overtreatment/undertreatment is really one of informed consent. The solution lies in communicating fully and effectively with patients, and involving them in the treatment planning process. We must discuss all available treatment options, explain which option we perceive to be the best under the prevailing circumstances, and why. If we do this, honestly and openly, we will have achieved informed consent, we will have fulfilled our professional responsibilities, and we will have done the best we can for our patients.

Bryun Sigfstead, DDS
President of the Canadian Dental Association

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1994
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NEWS FROM THE PROVINCES

DECEMBER, 1935

MANITOBA

CANADIAN FOUNDATION
FOR PREVENTIVE DENTISTRY

The clinic work conducted by the Canadian Foundation for Preventive Dentistry continues to grow year by year, and is now assuming considerable proportions. When it is realized that these clinics are not initiated by the foundation, but by the districts themselves, one realizes that the public of Manitoba is fast awakening to the value of good mouth health. Great credit is due to the various local organizations such as the Women's Institutes, United Farm Women, school trustees, teachers, etc., and also to the efficient Nursing Division of the Dept. of Health, for the good work they are all doing in the interests of the children of this province.

During the first nine months of this year, 35 clinics have been held covering 64 schools, and 1,837 children have been operated on, as against a total for 1934 of 19 clinics, covering 35 schools, and 1,185 children operated on. In addition to this, we did six days' work for the Provincial Unemployment Relief Commission and are looking after the clinics at Brooklands. This clinic was made possible by a grant from the Winnipeg Kiwanis Club, supplemented by an equal amount raised in the village. There are about 600 children in this village, which is a suburb of Winnipeg. The clinic chairman was also asked to speak on the subject of dental clinics at the annual meeting of the Women's Institute and at the conference of the Public Health Nurses.

physicians as guests, listened intently to one of our great research workers as he, in a convincing manner, covered point after point in perfect logic. Some of his statements were as follows:

"Foci of infection are of basic importance in systemic diseases, but it does not follow that complete recovery will always result from the removal of a diseased tooth, since the tooth might not be the only focus."

"A localized focus of infection that cannot drain and does not heal, although symptomless, is a menace to the patient and a potent source of disease in other parts of the body."

"Seventy-five per cent of pulpless teeth showing no evidence of periapical involvement clinically or radiographically are potent sources of infection, and some evidence of infection has been demonstrated about even a greater percentage."

"The infective organism is a streptococcus, usually of the diplococcus type."

"Bacteria found in chronic localized infections (focal infections) very often possess power of elective localization, e.g., organism taken from a root infection of a patient suffering from kidney stones, if cultured in brain broth and injected into an animal, very often produce in that animal a similar kidney lesion; or organisms taken from a patient with joint lesions, when injected into an animal, will produce joint manifestations in the animal and so forth."

"Pyorrhoea pockets are potent sources of infection as well as root end infection."

ONTARIO

TORONTO ACADEMY OF DENTISTRY

The Toronto Academy of Dentistry held its annual dinner meeting at Eaton's, College St., on October 28. Dr. E.C. Rosenow, of the Mayo Foundation, gave an illustrated lecture on the "Importance of Focal Infection as Related to Health." Two hundred and forty Toronto dentists, with 50 or more Toronto

BRITISH COLUMBIA

A dental clinic for children was held in Dawson Creek, September 9 to 24 by the Health Unit. Two hundred and twenty-six patients attended and received the following treatments:

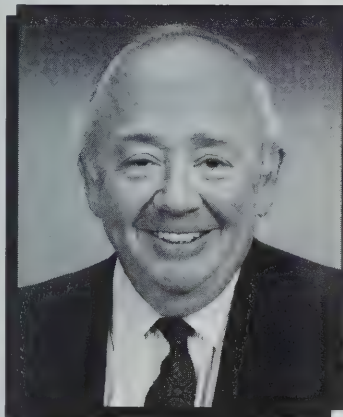
Prophylaxis, 224; amalgam fillings, 344; cement fillings, 61; enamel fillings, 70; extractions, 250.

Diamond Jubilee of Publication

Throughout 1994, the *Journal of the Canadian Dental Association* has celebrated its 60 years of publication as the authoritative "voice"

of dentistry in Canada. Each month, in commemoration of its Diamond Jubilee, the *Journal* has reprinted an article from Vol. 1, 1935.

60



CDSPI Welcomes The New Year With Program Improvements For The Dental Profession

Dr. Rod Moran

President of CDSPI

It may be the end of the year, but for dentists it could also be a time for new beginnings — thanks to the Canadian Dentists' Insurance Program (CDIP) and the CDA RSP. Both programs are now offering dentists new choices for 1995.

Here at Canadian Dental Service Plans Inc. (CDSPI), we often tell you that the financial programs we administer have evolved over time to keep pace with dentists' changing needs. That principle has been especially evident over the past couple of years, and will continue into 1995 with many important plan enhancements.

It gives me great pleasure to inform you of these changes, many of which stem directly from your valued input.

I'll begin with a benefit that actually breaks new ground in the sphere of group insurance for a professional body — an achievement of which all dentists should be proud. It's called the Members' Assistance Program (MAP).

Members' Assistance Program

This new benefit is identical to an employee assistance program (EAP), a benefit common to many group plans for both large and small companies throughout Canada. The Members' Assistance

Program provides personal counselling and support services to everyone who participates in CDIP's basic life insurance, long-term disability and/or office overhead expense insurance plans. A participant's spouse/partner and dependent children living at home are also eligible to use this benefit.

Everyone has difficult issues or concerns to deal with from time to time, and this program is here to help when those issues become too difficult to handle on your own. Participants in any of the three plans just mentioned can use this program when any issue is affecting their family life, work life or general well-being. It's absolutely confidential, and there is no cost to participants or family members for using this service.

Just call the 1-800 number provided to all eligible participants and arrange for an experienced professional to provide short-term counselling, advice or information. This service deals with marital and family matters, anxiety, work problems, depression, financial or legal concerns, and drug and alcohol misuse, among other issues.

It's no secret that stress is a significant problem among many professionals — dentists included — and I'm glad to say that the

MAP benefit is a positive step toward helping people deal with this issue.

Hospital Cash Insurance Plan

CDSPI has also introduced a new personal insurance plan for 1995 — hospital cash insurance — which offers three main types of coverage:

- If an insured person is hospitalized, this plan pays a daily cash benefit.
- If an insured person is diagnosed as having a major medical condition, such as cancer, heart attack or stroke, a lump sum cash benefit is paid.
- A daily cash benefit is paid for four specialized medical situations: when an insured person requires treatment in intensive care, outpatient cancer treatment, day surgery, and home nursing.

In each case, you can use the cash benefits from this plan in any way you wish. For example, to cover the costs of semi-private rooms, the travel of loved ones, day care, or treatment in another province or country. This plan is available as individual or family coverage, and no medical is required.

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The CDIP hospital cash plan is being offered because hospital stays and debilitating illnesses can present real financial difficulties. CDSPI conducted a formal survey among Canadian dentists and found that a significant number of you wanted coverage to protect against such difficulties. For details on the plan, consult the CDIP plan brochure that was mailed to you in November, or call CDSPI.

A New Fund For the CDA RSP

While I'm on the subject of surveys, it was also a survey that prompted us to launch the CDA RSP international equity fund, which will be available as of January 1995. Tabulation of survey cards — which accompanied the CDA RSP May statement — told us that an overwhelming majority of respondents wanted this type of fund.

Foreign investment funds have attracted a lot of attention over the past few years and, once again, I'm happy to report that the programs administered by CDSPI are keeping pace with industry developments. Diversification is key to retirement investing, and now there are seven CDA RSP funds to choose from. Keep in mind that according to RRSP regulations, no more than 20 per cent of your annual contribution can be made to an international fund.

CDSPI will provide complete information on this new fund in January.

Those are the major changes for 1995. In addition, a couple of CDIP plans have been significantly enhanced. Data processing coverage has been included — at no extra cost — in the office contents portion of TripleGuard. This coverage is identical to the coverage offered under the CDIP data processing insurance plan. Also, the dentists' staff insurance package now includes entry level coverage, which provides basic coverage at a low cost with no need for a medical. It's designed for recently hired staff members, but all eligible staff members not currently participating in the dentists' staff insurance package can apply for entry level coverage until February

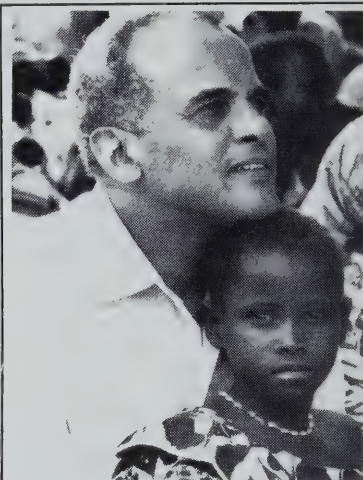
28, 1995. I urge you to tell your staff about this extremely economical package.

There's yet one more improvement to tell you about — new ways to pay your CDIP premium. Now you can pay quarterly or annually by VISA, or monthly with pre-authorized chequing. It's one more way we're making your insurance program as convenient for you as possible.

As a profession, we can all take pride in the reputation of the Canadian Dentists' Insurance Program as being one of the most comprehensive programs offered to any professional group in Canada. Now, with yet another insurance plan and several notable enhancements, CDIP is better than ever.

We can also take great pride in the CDA RSP which offers the full range of funds you have requested over the years — including an international equity fund — with perhaps the lowest management fees you'll find anywhere.

It may still be December, but we've already got plenty of reasons to start celebrating the New Year. ■



— Harry Belafonte
UNICEF Goodwill Ambassador

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Toronto, Ont. M4S 2L8 Telephone (416) 482-4444
OR call toll-free 1-800-268-6364 (Operator 509)

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	* Unit values at		12 Month Return %
	October 31, 1994	September 30, 1994	
Bond & Mortgage Fund	11.17889	11.18766	-1.2%
Common Stock Fund	23.59970	24.71030	1.3%
Money Market Fund	68.55157	68.30752	4.6%
Balanced Fund	42.52571	42.61423	-0.1%
Aggressive Fund	8.76055	9.07547	N/A

G.I.C. Fund Term

	October 31, 1994	September 30, 1994
1 yr	6.20%	6.20%
2 yr	7.20%	7.15%
3 yr	7.45%	7.40%
4 yr	7.65%	7.65%
5 yr	* 7.95%	7.90%

(*Rates subject to change without notice.)

*Total Net Assets (market value) of the Plan as of:
(includes RRIF assets)

	October 31, 1994	September 30, 1994
	\$188,370,811.00	\$190,391,835.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

416-296-9401 Metro Toronto
1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

NEWS UPDATE

CDA Alerts Members To Upcoming Amalgam Broadcast

CDA members received a special President's Letter last month warning them to be prepared for a new onslaught of questions from patients concerned about the safety of dental amalgam.

The letter was sent shortly after CDA learned that the Canadian Broadcasting Corporation (CBC)

would broadcast a one-hour anti-amalgam story on its Newsworld channel. Originally produced by the British Broadcasting Corporation (BBC), "Poison In the Mouth" presents a one-sided, extremely negative view of the amalgam controversy.

The BBC program, which was broadcast November 19 in Canada, includes lengthy interviews with British researchers, Drs. M.J. Vimy and F.L. Lorscheider of Calgary, a

number of prominent U.S. researchers, and officials of the British Dental Association (BDA). It is particularly harsh toward the BDA, however, which is criticized for failing to seek government support for research on dental amalgam toxicity, and for not being aware of the most recent U.S. scientific studies in this area.

CDA is continuing to monitor the latest scientific research on dental amalgam, including the U.S. studies referenced in the BBC program. In addition, the association is seeking federal government support for definitive research in the dental amalgam area.

"We must continue to base our (amalgam) policy on the current scientific consensus, and not on media coverage or popular interpretations of scientific findings," wrote CDA president Dr. Bryun Sigfstead in his President's Letter. "Our primary concern is and has always been patient interest, supported by sound and current scientific findings. We are prepared to revise policy when warranted scientifically, and emphatically deny any motivation or interest to suppress information on dental amalgam, or to support its continued use in the face of scientifically proven dangers."

A dental amalgam patient information sheet, which provides a series of questions and answers on the amalgam issue, as well as a review article by Dr. Derek Jones (The Enigma of Amalgam in Dentistry. *J Can Dent Assoc* 59(2):155-166, 1993) were distributed with the President's Letter. ■

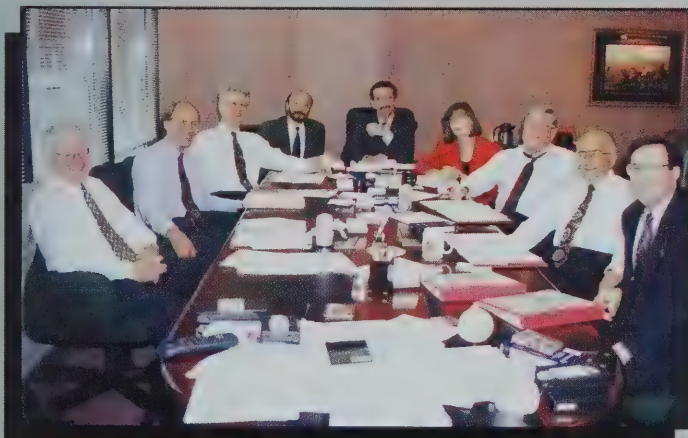
CDA Tax Spokespeople Prepare To Meet the Press

In preparation for the opening salvo in CDA's media campaign against the taxation of employer-paid dental plan premiums, association spokespeople participated in an intensive, full-day training session in September.

Conducted by Ottawa media expert Barry McLaughlin, the session briefed CDA's spokespeople on how to respond to media questions on the tax issue, as well as on the nuances required to be fully effective during a radio or television interview.

CDA launched its media campaign October 3 in Vancouver, when it conducted a press conference on the tax issue in conjunction with FDI 1994. Following the press conference, stories in support of CDA's position appeared in the Vancouver *Sun*, Vancouver *Province* and the *Financial Post*. CDA has also received favorable coverage in the Edmonton *Sun*, the Montreal *Gazette*, and the Victoria *Times Colonist*.

Full details on CDA's campaign against the taxation of employer-paid dental plan premiums are available in the November and December issues of *Communiqué*, CDA's members-only newsletter. ■



CDA spokespeople learn how to "meet the press" (l to r): Dr. Robert Hicks, chairman of the CDA taxation committee; Dr. Bryun Sigfstead, CDA president; Dr. Jim Brookfield, CDA president-elect; Mr. Jules Lizotte, information officer for the Quebec Dental Surgeons' Association (QDSA); Dr. Daniel Pelland, QDSA president; Dr. Elizabeth MacSween, vice-president of the Ontario Dental Association (ODA); Mr. Jardine Neilson, CDA executive director; Dr. Ray Wenn, CDA past-president; Dr. Roger Howard, ODA president-elect.

Saving Smiles In B.C.

The College of Dental Surgeons of British Columbia, in conjunction with the Variety Club of British Columbia, has raised \$13,600 in its fourth annual fund-raising drive for children in need of urgent dental care.

Funds for the Save A Smile campaign are solicited from the B.C. dental profession and affiliated businesses, and are used to provide dental treatment to children who are not covered by public or private

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dental insurance, or any government program.

Currently, the provincial Health Ministry operates an urgent needs program for kindergarten children and for those four years of age or younger. Through the Save A Smile program (SAS), the B.C. College provides dental care to older siblings of children assisted under the auspices of the government program, in addition to helping fulfil unmet dental needs of children up to the age of 16 who meet established criteria.

In the past four years, more than 150 children have benefited from SAS assistance across B.C. ■

ODQ and McDonalds Launch Unique Dental Awareness Program

The Order Of Dentists of Quebec (ODQ) and McDonalds Restaurants have teamed up to launch a "far-out" dental awareness program.

Held during April, Dental Health Month, the "spatial smile" contest offered participating Quebec children a chance to win a week-long stay at a "space camp" in return for learning more about their oral health.

During April, place mats given out at the McDonalds' restaurants in Quebec displayed oral health information as well as a spatial smile contest entry form. Five lucky winners were invited to bring a friend to the Amateur Aerospace Research and Development Agency in Rosemère Québec. In all, 50,000 children participated in the contest. ■

Canadians Honored By Pierre Fauchard Academy

Three distinguished Canadian dentists received special honor and recognition from the Pierre Fauchard Academy October 4 at a special awards luncheon held in conjunction with the 1994 FDI World Dental Congress.

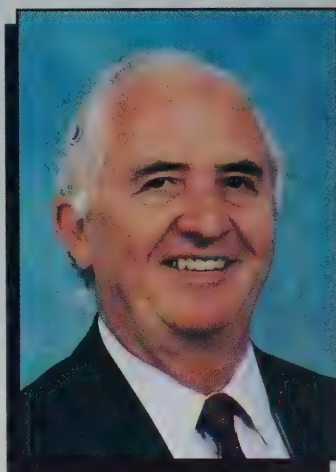
In all, 25 new fellows were inducted during the luncheon, which marked the largest such meeting in the academy's history.

Manitoba Appoints New Dean

The University of Manitoba has appointed Dr. James N. Wright as dean of the faculty of dentistry, effective July 1, 1994.

Dr. Wright succeeds Dr. Ronald Jordan, who stepped down from the dean's position earlier this year due to ill health. Prior to his new appointment, Dr. Wright had served as associate dean of the dental faculty and was the head of the department of stomatology from 1986-1990.

Before coming to the University of Manitoba, Dr. Wright enjoyed a distinguished career in the Canadian Forces Dental Services, retiring with the rank of Brigadier General. He graduated from the University of Alberta's dental faculty in 1956 and obtained his certification in periodontology from the Walter Reed General Hospital in Washington D.C. in 1965. Five years later, in 1970, he was awarded a master of science in dentistry degree (oral pathology) from the Univer-



Dean James N. Wright.

sity of Toronto. Dr. Wright is also a member of the Royal College of Dentists of Canada. In 1986 he was awarded the University of Alberta Dental Alumni Outstanding Achievement Award.

A former governor and member of the executive council of CDA, Dr. Wright also served as an FDI commission chairman and is currently president-elect of the Canadian Dental Service Plans Inc. (CDSPI). ■

Dr. Nicholas Mancini of Hamilton, Ontario, received the academy's most prestigious international honor, the Elmer E. Best Award. Recognized as a leader in his church and his community, Dr. Mancini earned his dental degree at the University of Buffalo in 1948. Today he is often called "Canada's Dental Chairman" in reference to his many years of service chairing the boards of CDA the Ontario Dental Association, and Canadian Dental Service Plans Inc. (CDSPI).

Dr. Mancini was recently honored by the ODA, who presented him with the Barnabus Day Award, and he is an honorary member of the Canadian Dental Association.

Dr. Bruno Martinello, who recently retired after a 19-year career as executive director of the Alberta Dental Association, was the recipient of the Pierre Fauchard Outstanding Service Plaque.

After graduating from the University of Toronto in 1955, Dr. Martinello went on to earn his doc-

torate in dental public health in 1962. In 1976, following an academic career at the University of Alberta and the University of Western Ontario, where he was chairman of the department of social dentistry, he was appointed registrar and executive director of ADA. He retired from his position with the association in 1993.

Canadian dentistry received an additional honor when Dr. Michael Crompton, a Moncton, New Brunswick, orthodontist, was elected as president of the Pierre Fauchard Academy, becoming the first Canadian and the first non-United States citizen to hold the top position.

No stranger to organized dentistry, Dr. Crompton has held numerous president and chair positions over the years, both within his home province and for the Canadian Dental Association. He served as CDA host-president when the FDI World Congress was held in Toronto in 1977. ■

B.C. Dentists Treat "Chernobyl" Children



Dr. Scott Stewart of Coquitlam, B.C. and his "Chernobyl" friend, nine year old Anton. Following dental treatment, Dr. Scott sent Anton home to Belarus with a gift of a new pair of skates and a poster of Wayne Gretzky.

Twenty children from Belarus recently received much needed treatment from volunteer members of the B.C. dental community.

Through the auspices of the Canadian Relief Fund for Chernobyl Victims, the children were in Canada for a six-week summer break from their home environment, which is still contaminated by fallout from the Chernobyl nuclear disaster.

The visiting children were brought to Canada in the hope that an extended stay in a "clean"

environment would help to restore their overall health. In many cases, their only previous dental experiences involved painful extractions. Dental care is not widely available in Belarus, and dental offices there are rarely equipped with anesthesia or medications.

In an effort to provide the children with a pleasant dental experience, and improve their oral health, a special preventive dental clinic was held at the UBC dental faculty. Where further restorative care was required, children were referred to

individual dental offices. Participating dentists reported that most of the children needed between two and four extractions. Some also required restorative work.

The children were all supplied with toothbrushes and fluoridated toothpaste before they returned home. ■

City of Sarnia Proclaims "Dr. Helene Shingles Week"

At a press conference and reception to establish the Dr. Helene Shingles Dental Foundation, the following proclamation from Sarnia's mayor, Mr. Mike Bradley, was read to honor Dr. Shingles for her dedication to meeting the oral health care needs of senior citizens:

WHEREAS Dr. Shingles, recognizing the urgent need for oro-dental care in the area nursing homes, and recognizing in these economic times the difficulty in obtaining government funding for geriatric dentistry, offered to provide this service free of charge following her retirement and

WHEREAS Dr. Shingles opened the first dental office in Marshall Gowland Manor in 1980 followed two

McGill Trains Dentists in Geriatric Care

Fourteen dentists from Quebec and Ontario recently received training in geriatric dentistry at McGill University.

The training program was a joint venture of the dental faculty's continuing education department and the public health unit of the Verdun General Hospital. It was offered in two parts, consisting of 45 hours of theory, and a minimum of 20 hours on the practical aspects of providing geriatric care.

Certificates of training were presented to program participants by Dr. Ralph Barolet, then the dean of the McGill dental faculty, during the Quebec Association for Special Care Dentistry annual meeting. ■



Recipients of certificates in geriatric training (l to r): Dr. J. Lafrance, Maniwaki, Qué.; Dr. E. Lessard, Thedford Mines, Qué.; Dr. P. Harrosh, St. Laurent, Qué.; Dr. T. Ringland, Ottawa, Ont.; Dr. Van Anh Bui, Montreal, Qué.; Dr. R.Y. Barolet, dean, McGill faculty of dentistry; Dr. T.D. Le, Longueuil, Qué.; Dr. A.L. Brenner, Côte St-Luc, Qué.; and Dr. K. Morehouse, St. Lambert, Qué. Missing from the photo are Drs. S. Avram, C. Caron, H. Clairmont, C. Fortin, James Morreale and A.T. Nugyen.

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years later by dental facilities being provided in Trillium Villa and in 1990 facilities were opened in Best View. St. Joseph's Health Centre has established a dental clinic for in- and out-patients — all of which are served by Dr. Shingles, and

WHEREAS For the past 14 years, five days a week, Dr. Shingles has been dedicated in volunteering her time to provide this service, and

WHEREAS A foundation has been established in Dr. Shingles' name to provide the equipment needed for her to perform her work and to ensure the continuation of this service long into the future,

THEREFORE I, Mike Bradley, Mayor of the City of Sarnia, do hereby proclaim September 12th to 17th, 1994 as Dr. Shingles Week in the City of Sarnia to honor this unsung hero for her tireless dedication in assisting seniors in the community.

The Dr. Helene Shingles Foundation has now launched a \$500,000 one-time fund-raising campaign to ensure that Dr. Shingles' work is carried on after her retirement. Money raised through the campaign will be used to hire dental personnel.

"I would like to continue as long as I can," says Dr. Shingles, "but I'm 77 now and they cannot expect anyone to continue this service free of charge."

A full account of Dr. Shingles' contribution to her community and fellow senior citizens was published in the May 1994 issue of the *Journal* (Crawford, P.R. Dr. Helene Shingles: A Life Dedicated to Geriatric Dentistry. *J Can Dent Assoc* 60(5):439-440, 1994). ■

OBITUARIES

Cheung, Dr. Paul K.W.: Born in Hong Kong in 1957, he graduated from the University of Toronto's faculty of dentistry in 1984. Dr. Cheung practised in Vancouver, B.C., before he died September 16, 1994.

Cormier, Dr. Leo A.: On September 20, 1994. A 1948 graduate from McGill University, Dr. Cormier practised in Saint John for 34

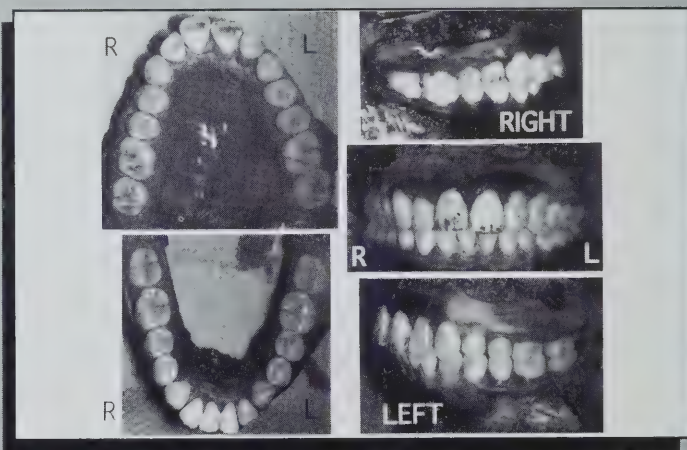
Request for I.D. of Young Female Body

The York Regional Police are seeking the assistance of dentists in the identification of a young female. The partially-burned body was found in an industrial park in the City of Vaughan, Ontario, just north of Toronto. The subject was five feet two-and-a-half inches tall, had black hair, and may have been of East-Indian, Nilotic (of the Nile region) or Asian descent.

All permanent teeth are present, and a composite resin restoration is present on the lingual of tooth number 22. Calculus is pre-

sent on the lingual of the lower anterior teeth and minor wear is visible on the enamel of all erupted teeth, with remnants of mamelons visible on tooth number 21. Staining was present on the incisal aspects of the maxillary incisor teeth.

Any person able to furnish information as to the identity of this female is requested to contact Detective Rick Finn, York Regional Police Major Crime Unit, at 905-895-1221, ext. 7863. ■



years. He was a life member of the New Brunswick Dental Society and a member of the Canadian Dental Association. His father, Dr. A.J. Cormier, was the first Acadian dentist and practised in Moncton for 50 years.

Levita, Dr. Harold: A 1943 graduate from the University of Toronto's faculty of dentistry. He died September 1.

Ma, Dr. Michael Kai Yuen: After graduating from the University of Toronto's faculty of dentistry in 1987, Dr. Ma practised in Toronto, Ontario. He died last August.

Milburn, Dr. H.: He graduated in 1925 from the Royal College of Dental Surgeons of Ontario, and then practised in North Toronto for 55 years. He was a life member of the Canadian Dental Association. Dr. Millburn died May 30, 1994.



EPILEPSY

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BOOK REVIEWS

Esthetic Restorations — Improved Dentist-Labo- ratory Communication.

by Paul J Muia.

1993, Quintessence Publishing Co., Inc.,
Chicago; 280 pages, 501 illustrations
(388 in color), \$98
ISBN: 0-86715-226-5

This large, glossy book has the usual superb photographs and an occasional colorful illustration that is the hallmark of Quintessence Inc. The intent of the author, a dental technician, is to show the methods used to construct ceramometal crowns and pontics so that, as the title indicates, dentists and technicians can complement each other.

The first chapter considers the principles of "case planning" in four categories: function, contour, color and patient's comments. Emphasis is placed clearly on the importance of occlusal contacts, with a swift review of occlusal theories and options for metal or ceramic contacts. There is, however, a good discussion on the use of porcelain to produce margins and contours that are biologically tolerable.

Unfortunately, the discussion on the relevance of comments from the patient is given short shift, which is no surprise considering the separation of patient and technician in most clinical relationships. I would have thought, nevertheless, that a technician with a panache for esthetics would have placed greater emphasis on the patient's involvement.

The next three chapters cover the full range of technical events from design and construction of the metal substructure through every detail to the final polish and glaze. There are photographic examples of every conceivable design variation and subtlety (I exaggerate a little), an elaborate description of tooth color, and lots of tricks for reproducing the vagrancies of nature. The lack of clinical examples to prove that the beautiful life-like crowns produced in the laboratory do the trick in the mouth is unfortunate. Still, there is no doubt that the author is an artist.

In the second to last chapter, the author provides useful descriptions of the common mistakes made in handling metal and porcelain, and explains why this is a difficult restoration. I felt, here, that we were back to reality — everyday dental practice. The information is well placed, because it is all too easy to choose this restoration as a panacea. We are given an unnecessary rerun of technical esthetic wizardry in the last chapter, however, and left with the uneasy feeling that dental technicians who write books for Quintessence all live somewhere else to wave their smoke and mirrors.

Overall, this is a useful book to awaken sensibilities, and to goad the ceramist in your local commercial laboratory.

Reviewed by:

Michael MacEntee, LDS, Dip. Prosth.,
FRCD(C), PhD
Professor and chairman of the division
of prosthodontics, department of clinical
studies, faculty of dentistry, University
of British Columbia.

Overdentures in General Practice, 3rd edition

by R.M. Basker, A. Harrison,
J.P. Ralph et al.

1993, British Dental Journal, London,
England; 145 pages, £18.50
ISBN: 0-904588-42-4

This book is published in a delightful size and format. A glossy-cover paperback that is easy to carry about and consult at any time, it is 145 pages long, with good quality black and white, and color photographs. It is designed for the general dentist who is familiar with and competent in many procedures.

The text is compiled from articles published in the *British Dental Journal* in 1983, 1988, and 1993. Six of the original chapters on overdentures have been revised, and three chapters have been added on implant overdentures. The text is clear and easy to read, and clinical photographs are frequently used for illustration. In addition, the discussions of tooth-supported overden-

tures are straightforward and succinct.

The three chapters on implant overdentures are the most recent and have superior photographs. The authors base their opinions on the use of a hydroxylapatite-coated implant system using rubber "O" rings for retention of prostheses.

This book provides a compact and useful overview of the subject, allowing dentists to decide if this approach is one that they wish to utilize. Once that decision is made, then other references and/or courses of instruction will help the interested dentist to treat his or her patients better.

Reviewed by:

Aaron Fenton, DDS, MS, FRCD(C)
Associate professor of prosthodontics,
University of Toronto.

Periodontal Regeneration: Current Status and Directions

edited by Alan M. Polson

1994, Quintessence Publishing Co., Inc.,
Chicago; 200 pages, 252 illustrations
(238 in color), \$72
ISBN: 0-86715-175-7

This book, published in 1994, consists of 12 chapters arranged to outline the evolution of regenerative techniques in periodontology. Written by different authors, each chapter also contains a wish list of the advances they would like to see leading to predictable and stable regeneration of periodontal tissues lost to disease, malformation, or trauma. The references are, by necessity considering the publishing timetables, somewhat dated.

Three chapters written by Tera-nova et al have a distinct basic science content and provide an interesting and stimulating discussion on current topics, including wound healing, regeneration, and biologic mediators. Much of the material discussed builds on the pioneering work of Glasstone at Cambridge, Slavkin at UCLA, and Melcher at Toronto among others. Dentists — including dental students — interested in the biologic basis of periodontal regeneration would be

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brought up to speed quickly by reading these chapters.

Graduate students in periodontology may well find the first three chapters on the relationship of root surface quality to regenerative potential of interest and value in providing a quick historical review.

There is also a chapter on the application of plastic surgery to gingival and muco-gingival problems.

The remaining five chapters, for the most part, deal with the repair or regeneration and surgery of osseous defects. These presentations provide much in the way of photographs and anecdotal reports showing clinical successes, albeit in the short-term, along with shedding some light on the research data related to healing following surgery. There is a tendency in clinical research to publish data indicating success using certain treatment modalities, with the result that these are then used clinically, perhaps prematurely, with overly optimistic expectations.

Advising caution, however, Garratt, in his chapter entitled Early Wound Healing, page 49, states: "It is a sobering thought to consider the unpredictability and relatively small level of regeneration achievable using today's techniques (Hancock, 1989), this despite nearly three decades of attempts at regenerating the periodontium."

And Coffesse, in his chapter entitled Clinical and Histologic Results of Regenerative Procedures, page 114, quotes Egelberg's 1987 paper:

"Little indication that grafts of cortical or cancellous bone have any inductive effect on the formation of new bone. Further, there is little reason to believe that such bone grafts would stimulate connective tissue attachment to root surface."

Reading these chapters, one is reminded that Pasteur is said to have advised his younger research colleagues that while he knew they would try to prove themselves right, they would be better served to try to prove they were wrong. This would still seem to be prudent advice, particularly in studies with relatively short-term results and especially when the publishing of clinical results seems to have out-paced the understanding of the biological ba-

sis of regeneration. Unless the two come into a critical balance that will ultimately benefit the patient over the relatively long-term, a situation will develop where clinical research will seem to have all of the questions and few answers, while basic science research will appear to provide all the answers asking none of the clinical questions.

Leaving aside the application of basic science research to the solution of clinical problems, if purely clinical factors do play a role in the genesis, in part, of the periodontal problems seen in practice, perhaps all or at least most of the clinical factors should be considered by the authors. For example, in the chapter on Guided Tissue Regeneration for Periodontal Defects, Becker, on page 137, states that: "When furcations are treated with new attachment procedures, root trunk length, inter-radicular loss of attachment, root proximity, buccolingual attachment loss, and depth of a vertical component are important diagnostic anatomic factors." And later: "The enlightened clinician bases treatment of bony defects on an understanding of anatomy, defect location and limitation for each procedure. Preoperative patient records should consist of accurate clinical probing depths and attachment levels and good quality radiographs."

Occlusion is not mentioned as being relevant either as a direct

cause of the periodontal problem at hand or as a cofactor. Perhaps the pendulum has swung too far and the once ubiquitous occlusal equilibration should be revisited, at least briefly, if only to provide a night-guard for the bruxer who has periodontal bone and furcation defects. It seems that to predict the outcome of a surgical procedure when a potential variable (occlusion) is not controlled may lead to failure of the regenerative technique in either the short- or long-term.

As in all phases of dentistry, change is occurring with great speed in periodontology as new techniques for clinical treatment come on the scene to be supplanted with equal speed by other techniques and materials. The book, therefore, as a purveyor of current knowledge, may well be an anachronism. In this day of interactive communication on the information highway, a presentation by a knowledgeable researcher/clinician at a convention or meeting, or via satellite linkage, provides at least the chance for the dentist to question the use of techniques and materials, and to differentiate fact from fiction.

The adage *Caveat Emptor* comes to mind when advising the purchase of this book.

Reviewed by:

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University of Western Ontario.

CDA MUSEUM donations requested

Memorabilia from CDA's 92-year history is now on display in antique cases in the library of the Canadian Dental Association headquarters in Ottawa.

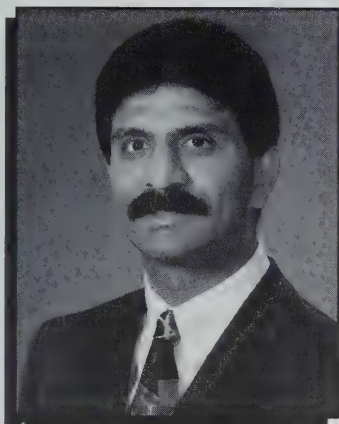
As originally planned, the displays are changed on a regular basis to suitably depict different eras of our rich dental history. Donations of museum-quality dental artifacts are still being accepted and are very much appreciated. Particularly requested are larger items such as chairs, units, cabinets and X-ray machines, plus historical photos and records.

Also of interest to dental historians are the items highlighted in the column entitled "What's it?" which appears monthly in the *Journal*. This column elicits the help of readers in identifying some of the antique items presently on location in the museum.

For further information, contact Dr. Ralph Crawford at the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. (613) 523-1770, or call toll-free 1-800-267-6354.

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Women Dentists: Equal and Different

Imtiaz Manji, B.Sc.

Principal of ExperDent

A patient visiting a dental practice for the first time may not know what to expect, be it in terms of the decor, atmosphere, size, attitudes of staff or overall new patient experience. However, until fairly recently, there was one near certainty — a male dentist would await them in the operatory.

As in many professions, the presence of women is a relatively new phenomenon in dentistry. In just two decades, the percentage of women dentists has quadrupled, from the early '70s when they comprised about 10 per cent of the graduating classes, to today, when 30 per cent of dental graduates are women. Forecasts suggest that "by the year 2000 approximately 35 per cent of all Canadian dentists will be female."¹

Happily, the experience thus far has proven to be largely positive. Women dentists generally report that they find great satisfaction in their work (which likely explains the increasing numbers of women drawn to the profession). Notwithstanding this general satisfaction, there are particular issues that women dentists must address differently, or to a greater extent, than their male counterparts.

Discrimination/Sexism

Thankfully, discrimination against women — at least in North America — is now largely a problem of the past. Women and men

are equal under the law and society holds a low tolerance for gender-based discrimination. However, that's not to suggest that females in the workforce don't encounter "one-on-one" discrimination, be it from male colleagues who resent their presence or financial institutions that can't shed their male customer bias.

Dr. Carol Waldman, a solo practitioner in West Hill, Ontario, recalls an experience she had while associating (which can be a source of problems for *both* men and women if the owner dentist is intent on mistreating them). "I was terribly unhappy because of the bad treatment I was receiving from the owner dentist. It was just general bad treatment, not necessarily gender-related. But when I told him I was leaving, he assumed that I was pregnant. He couldn't fathom that I would be leaving for any other reason."

Interestingly, such remarks aren't confined to male dentists. I've heard women practitioners dismiss the idea of hiring a female associate. "She'll be getting pregnant soon," they claim. In such cases, the concern clearly isn't about the fact that the dentist is a woman; it's usually a practical concern over the potential for two female dentists to be on simultaneous maternity leaves (a not unlikely scenario if proper planning, joint

decision-making and effective communication aren't in place).

Mistaken Identity: Communication is Key

Although such slights occur, they are likely to be the exception rather than the rule. If gender does play a role, it is more likely to be in educating patients about the presence of women dentists, particularly those who are unaccustomed to women providing more than dental hygiene care.

Women dentists who also provide hygiene care must ensure their qualifications are clearly communicated to new patients in order to avoid being perceived as a dental hygienist. Dr. Margaret Wong, a partner in a group practice in Richmond Hill, Ontario, says she's often been mistaken for a hygienist. "Even though I always introduce myself as the dentist, I've had new patients ask, 'When can I see the dentist?'"

On Maternity

The concern regarding pregnancy isn't just in the minds of others, it's often a tortuous issue for women dentists as well. Some of them delay having children because of economics. With substantial debt from dental school and practice start-up costs, there doesn't seem to be room in the financial picture for starting a family. The practice and all its demands are the focus.

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But women who want to have children can ignore their biological clocks for only so long. And once they've made the decision to start a family, they must ensure that plans for both their practice and their pregnancy mesh. This holds true regardless of any particular practice configuration.

Bringing in a Locum

Planning for a maternity leave can be particularly tricky for solo practitioners who hire locums. Without the right individual, the fallout can be tremendous.

What happens if the locum doesn't mesh with your staff and/or patients? You could end up losing some of both (this is especially true of young practices, where loyalty may not be firmly entrenched). Or what if the locum's clinical skills prove to be different from yours and the quality of the dentistry comes back to haunt you? With overheads likely around 60 per cent and locum compensation at 40 per cent, you could actually end up losing money. The hygiene department can also suffer if patients defer appointments until your return.

Although such thorny issues are not confined to maternity leaves — they are present in all locum arrangements — they are most pressing for women who tend to have longer and more frequent absences.

Because of the risks involved in bringing in a locum, some women dentists hire associates prior to taking maternity leave. This can be a good option, particularly for women who have full, growing practices and who plan to reduce their hours in the practice once they've returned from maternity leave. As a permanent part of the practice, the associate is likely to take a vested interest in ensuring that the practice's success continues in the owner dentist's absence. (Clearly, this option only exists if the patient base can support the necessary and desired income levels of the two practitioners.)

Closing Your Doors

A word of caution if you decide to "shutdown" during your maternity leave, like Dr. Waldman has

done on two occasions. You better be sure that you; have an extremely loyal patient base; have arranged for emergencies to be seen by another practitioner; and are prepared for the rebuilding you'll have to do to regain lost momentum.

Let patients know that you're back, via a newsletter or some other communication tool, to thwart further patient loss and facilitate new patient flow.

Reducing the Risk

The risks seem less for women dentists who work in partnership or group practice settings, particularly where the discussion of critical issues occurs prior to forming a partnership. This includes detailing hours of work per week, the calendar, overhead contribution (which may be based on usage), and the handling of potential absences (particularly with respect to the distribution of hygiene revenue and patient ownership).

Having worked out such details, these women dentists have the luxury of having colleagues available to assist during absences, and this locum-like situation proves to be "the next best thing to being there" for both staff and patients. Dr. Wong, whose three partners covered for her during her two maternity leaves, agrees.

"My patients came in for their hygiene appointments, and the other dentist provided their exams and emergency care. As for treatment, patients were given the choice to wait for my return or have one of the other practitioners treat them. We also hired a part-time associate to handle new patients and extended hours."

Drawing Outside the Lines

If a locum or colleague isn't a workable situation, consider a creative, albeit seldom used, solution. Form an alliance with other female dentists in your area so that you can cover for each other during maternity leaves. If you had a six member group, five practitioners could provide dentistry one day each week in the sixth member's practice. (Incidentally, such alliances are useful for all dentists in order to arrange coverage for extended holidays or unforeseen ab-

sences such as temporary disability.²)

Dealing With the Juggling Routine

Maternity leave is but the beginning of the juggling act. Because women's entry into the workforce has not typically coincided with a split of domestic responsibilities, the majority of child-rearing responsibilities (not to mention caring for aging parent or in-laws) are still held by women. Trying to "do it all" — being a good dentist, wife, mother and daughter — is no easy challenge.

Support at Home And the Office

What makes the challenge easier is to surround yourself with people who understand the importance of your time and your many, sometimes competing, responsibilities. At work, this means that you hire and reward those staff who facilitate your ability to provide optimum patient care and whose qualifications and organizational skills allow them to manage the administrative areas.

Dr. Wong agrees that the "Super Mom" juggling act is difficult, but says that having strong support at home and establishing management systems at the office certainly makes it possible. "My assistant and receptionist run the show. I'm at the practice for the time scheduled and then off to wherever — be it to pick up the kids at daycare or attend a continuing education course."

Creative Calendars Provide Flexibility

Among the many "draws" for practising dentistry, the fact that it can provide flexibility is a particularly salient feature for those who need it.

Both Drs. Wong and Waldman initially planned to enter medicine but, after considering the balances they were looking for between their private and professional lives, they opted for dentistry. "Dentistry definitely provides flexibility," says Dr. Waldman, whose staggered hours sometimes give her the opportunity to walk her children back to school after lunch.



But flexibility in the calendar and hours worked comes at a cost whether you're male or female. This is summarized well by dentists Susan Zelazo-Smith and Barbara Talbot in their article, *Dentistry and the Family*.

"Time out of the office means less production and less income. We find ourselves in a "Catch 22" — we have the flexibility to be out of the office to be with our children, but if we exercise this right we will face financial hardship in our practice. Our flexibility is limited by our patients' needs as well. The peak appointment times in most young dental practices are evenings and Saturdays. This means that in order to maximize production, the dentist must give up this time with his or her family."³

The solution: strike a balance between the need for flexibility and the need for a successful practice. Doing what Dr. Wong does — which includes scheduling early

morning appointments, and working one evening per week and one Saturday per month — is an excellent calendar mix for gaining flexibility and giving patients choices.

Enjoying the Profession

Like Drs. Waldman and Wong, many women dentists are finding creative ways to meet the ongoing challenges of balancing the demands of career and family.

However, for those dentists trying to achieve and maintain better balance in their lives, the best source of support and help lies among their own ranks — with colleagues (both female and male) and professional associations. The best place to brainstorm and troubleshoot is among those who are in similar circumstances. Women dentists, like their male counterparts, must not make the mistake of isolating themselves in their operatories. In addition to the local, provincial and national organizations, there are groups such as the

Women Dentists' Association of Ontario and the Association of B.C. Women Dentists that can be a tremendous resource.

As the first wave of women dentists continue to succeed — and to find ways to overcome issues that arise — they can applaud themselves for the notable headway they're making. Not only does this progress benefit them, as practising women dentists, it increases the likelihood of success for their followers, the increasing numbers of women entering the profession. And it demonstrates that, male or female, dentistry remains a promising and stimulating profession. ■

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2. Manji, Imtiaz. Keeping Your Practice Afloat in Your Absence. *J Can Dent Assoc* 58:97-98, 1992.
3. Zelazo-Smith, Susan and Talbot, Barbara. Dentistry and The Family. *CDS Review* 84(8):44-45, 1991.

In Communiqué This Month . . .

CDA Appears Before Commons Finance Committee

- CDA appeared before the Commons Finance Committee November 16 to present dentistry's arguments against the taxation of employer-paid dental plan premiums.

CDA Key Partner In Alliance to Preserve Retirement Equity

- CDA was a founding member in a multi-association alliance formed to lobby against reductions in the allowable contribution limits for RRSPs. The alliance, which appeared before a Commons Finance Committee November 17, also argued against the taxation of the interest income generated by individual RRSPs.

CDA Close to Reaching New Claims Form Agreement With MSB

- Following a recent meeting with CDA, Medical Services Branch has agreed in principle to reinsert the signature block in the Non-Insured Health Benefits (NIHB) Claim Form. The two sides will meet in January to resolve remaining concerns.

CDA To Meet Again With Veterans Affairs Canada

- CDA will meet with officials from Veteran Affairs Canada next month to discuss its ongoing concerns over recent amendments to the TAPS program.

... And More

Look for these stories and more in the special December government relations issue of *Communiqué* delivered to you with this issue of the *Journal*. CDA members receive *Communiqué* six times per year in the language of their choice as a benefit of membership in CDA. For more information, or to join your national association, call 1-800-267-6354.

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CLINICAL



A Critical Evaluation of Diagnostic Tests for Periodontal Disease

H. Louie, DMD, Dip. Perio.

H. Larjava, DDS, PhD, Dip. Perio.

Introduction

Current understanding of the natural progression of human periodontal disease and its pathogenesis has influenced our approach to periodontal diagnosis. Traditionally, pocket depths and radiographic evidence of bone loss have been the markers of active periodontal disease. Unfortunately, these indicators depict periodontal disease after the fact, and are poor predictors of future disease activity.^{1,2} As knowledge of periodontal diagnosis continues to expand, an evaluation of the different potential markers for disease activity is required.

Three developments have shaped current thought on the diagnosis of periodontal disease.

First, clinical studies in the 1980s suggested that disease progression is episodic and infrequent, and that it may be possible to distinguish active from quiescent disease activity. Furthermore, active periodontal disease is not as prevalent as once believed. In a one-year study of 36 patients with untreated advanced periodontal disease, Lindhe et al³ showed that only three per cent of sites deteriorated, and that five of 36 patients accounted for 41 per cent of the active sites. Others have reached similar conclusions.⁴⁻⁶

Second, we know that different teeth are particularly susceptible to disease. Retrospective evaluations of patients treated in peri-

odontal practices have shown that 22 per cent of the teeth affected by periodontal disease, on average, are eventually lost.⁷ The great majority of tooth loss occurs in the molar areas, whereas lower canines are usually retained. Therefore, tooth loss studies and epidemiological data not only support the concept that advanced periodontal disease occurs in a small group of the population, but also the idea that there are differences in disease progression within individuals.

Third, there has been an exponential increase in our understanding of the tissue destruction that occurs with periodontal diseases. This destruction may be brought about directly by certain bacterial enzymes and toxins, which act by degrading tissue or reducing cell viability, or it may be caused indirectly by infecting organisms that induce, stimulate, or activate host cells or humoral factors.⁸ In either event, it is likely that periodontal destruction involves both immunologic and nonimmunologic processes in which proteolytic enzymes degrade the fibres anchoring the tooth. The active phases of destruction (or "bursts") may involve an acute inflammatory reaction in which polymorphonuclear leucocytes play an important role by releasing proteolytic enzymes such as collagenase and elastase.

If a specific, easily detectable marker of disease activity could be

found, we could direct our therapeutic resources toward treating those patients at high risk to attachment loss. The purpose of this article is to discuss how some of the new techniques in diagnosis could fit into clinical practice.

Different Approaches to Diagnostic Testing

Diagnostic tests fall into three categories: A. Measurement of the physical characteristics of the periodontium; B. Consideration of microbiological factors; and C. Examination of the host responses (Table I).

A. Physical Characteristics Of the Periodontium

The increase in the affordability and sophistication of small computers has led to the development of dental instruments that can improve probing precision, measure pocket temperature, and determine the elasticity of the periodontal attachment. Automated periodontal probes such as the Florida Probe^a and the Interprobe^b are probably the most notable examples.⁹ These instruments control probing force, automatically record and store results, and can discriminate in 0.5 mm intervals (the Florida 0.1 model can actually discriminate in 0.1 mm intervals). Other probes use various reference points for measurement, such as the occlusal surface (Florida Disk Probe^a) and the cemento-

Table I

Periodontal diagnostic tests

Physical characteristics of periodontium		Microbiological assays		Host response assays	
Test	Instrument	Test	Instrument	Test	Instrument
Pocket depth	Florida probe Interprobe Jeffcoat Probe	Microscopic	Phase contrast, darkfield	Enzymes	Periocheck, Prognostik, PerioGard, β -glucuronidase
Sulcular temperature	PerioTemp	Culture	—	Cytokines	IL-1 α , IL-1 β , TNF- α , PGE ₂
Tooth mobility	Periotest	Immunologic	Immuno-fluorescence, ELISA, Evalusite	Antibodies	IgG, Dot-immunoassay
—	—	Genetic probes	DMD _x , Affirm	—	—
—	—	Enzyme	BANA, Perioscan	—	—

enamel junction (prototype Jeffcoat Probe).

The high level of precision that can be achieved with automated probes marks a major step forward from the limitations of manual probes. Because of the high inherent error found with manual probes, an increase of 2.0 - 3.0 mm in probing depth is necessary before a diagnosis of progressing attachment loss can be made with any reliability.¹

Another "new age" probe relies on variations in temperature to identify periodontal disease. The PerioTemp^c is a thermocouple probe that automatically computes the difference between the measured subgingival temperature and the patient's "core" temperature, which is determined by a sublingual measurement. The device adjusts for the anterior (cooler) to posterior (warmer) temperature gradient that normally exists in healthy sites, and displays "healthy" versus "diseased" sites via a system of colored lights.¹⁰ Unfortunately, the probe's sensitivity declines when it is used in the posterior regions of the oral cavity, where periodontal disease, particularly in the mandible, is most prevalent. Haffajee et al^{11,12} have suggested that the prediction of disease activity may be enhanced by combining subgingival temperature readings with a consideration of other clinical pa-

rameters such as bleeding on probing. However, the use of the PerioTemp probe has not been widely accepted.

The Periotest^d is designed to measure the damping constant of the periodontal membrane. It works by tapping the tooth with an impeller-driven piston, which is built into the handpiece, and then measuring the time for the tooth to return to its original upright position. This device may help to monitor excessive or progressive mobility of teeth. It is important to note, however, that tooth mobility itself is not a good predictor of attachment loss.¹³ To date, the Periotest has been used principally to test implant stability,¹⁴⁻¹⁶ but has also been used to evaluate tooth stability following orthodontic and prosthodontic treatment.^{17,18}

B. Microbiological Tests

The diagnostic tests to monitor bacteria may be divided into five classes: 1) microscopic monitoring; 2) culture assays; 3) immunologic assays; 4) genetic probes; and 5) enzyme assays.¹⁹

1) Microscopic Assays

Phase contrast microscopy and, more commonly, dark-field microscopy have been used to assess the motility and morphotypical variation of bacteria. Of particular interest, with regards to periodontal destruction, are spirochetal and motile organisms.²⁰ Microscopic

monitoring, however, cannot differentiate between pathogenic and non-pathogenic species, or determine the relative effectiveness of antibiotics. Also, this method is not a reliable predictor of disease activity. Nevertheless, it has helped to educate and motivate patients by showing them living organisms in plaque taken from their teeth.

2) Culture Assays

Growing bacterial species directly is a common approach to microbiological diagnosis. This method is useful not only for identifying bacterial species that may be associated with periodontal disease, but also for examining the antibiotic susceptibility of the cultured organisms. It is unlikely that the proportion of microorganisms grown in culture would reflect the actual proportion in the oral environment, however, since not all organisms can be readily cultivated.¹⁹ So-called "non-selective" media always involve selective pressures that favor growth of some bacteria and prevent the growth of others. The physical constraints of the periodontal pocket make it difficult to obtain a representative sample of organisms without also collecting large numbers of contaminating species. In addition, the method of sampling the pocket can introduce a large source of error, especially if the sample is non-homogeneous.²¹

Moreover, the periodontal pocket may harbor 300-400 different bacterial species, and the presence of many of the so-called "periodontal pathogens" does not necessarily predict attachment loss. These and other factors, such as the role of organisms in a carrier state, and those organisms that are present as opportunists, make it difficult to interpret assays.²² Nonetheless, culture tests can be very useful in directing antibiotic therapy, particularly when resistant organisms are present. This method, however, is labor intensive and usually requires a couple of weeks before the results are available.

3) Immunologic Assays

Immunologic assays rely on the reaction of specific antibodies to selected antigens of the microorganism. The presence and relative proportion of the target bacteria can be determined by immunofluorescent (direct or indirect) or colorimetric analysis (enzyme linked immunosorbent assay (ELISA)) of the labelled primary antibody.^{23,24} Direct immunofluorescence involves labelling the primary antibody with a fluorescent marker. In the indirect technique a secondary antibody is labelled. When ELISA is used, the primary antibody is detected by a colorimetric reaction catalyzed through enzymes linked to the antibody. Cross-reactivity of the antibodies is a major problem in such tests,²⁵ particularly with bacteria, such as spirochetes, in which surface antigens are poorly defined. Another significant disadvantage is that the test will detect only those organisms with accessible antigens.

The Evalusite[®] periodontal test was designed to rapidly assess three putative periodontopathogens: Porphyromonas gingivalis (Pg); Prevotella intermedia (Pi); and Actinobacillus actinomycetemcomitans (Aa). It is based on a sandwich immunoassay technique in which bacteria are passed through test wells containing antibodies to each of the three pathogens. A series of reagents are passed through the wells, resulting in a colorimetric reaction that can be scored visually. This test has the advantage of identifying potential pathogens rapidly, without bulky so-

phisticated equipment, but there is no evidence that this combination of three periodontopathogens has any value in predicting attachment loss. Nor does the test give information on antibiotic sensitivity.

4) Genetic Probes

Genetic probes apply gene analysis to detect and identify periodontal pathogens. These probes have their basis in the fact that different bacterial species have unique segments of DNA, and that it is possible to construct complementary nucleic-acid probes to hybridize specific DNA sequences. Whole genomic probes, because they use the entire genetic fragment of the target organism, are highly sensitive. Cross reactions with genetically similar species may occur, however. Oligonucleotide probes, which may be used to hybridize short segments of ribosomal RNA from the target organism, are less sensitive in detecting oral species.²⁶⁻²⁸

OmniGene offers whole genomic probes to Pg, Pi, and Fusobacterium nucleatum (Fn), as well as oligonucleotide probes to Aa, Eikenella corrodens (Ec), and Campylobacter recta (Cr). Several configurations of this test are available, including the DMDx[®] test (which measures Pg, Pi, and Aa), and the DMDx Plus[®] test, which measures the DMDx organisms plus Ec, Fn, and Cr. These tests use a radioactive ³²P marker, so they require special laboratory facilities.²⁶ The clinical procedure, however, involves using paper points only to obtain a sample of the periodontal organisms.

The Affirm DP Test[®] is an RNA probe that tests for Bacteroides forsythus (Bf), Pg, and Pi. At this time, the test is approved for research purposes only. Unlike the Omnigene test, it uses an oligonucleotide probe and an enzymatic marker, thereby eliminating the special protocol required for radioactive markers. Bf is associated with some progressive periodontal lesions and is highly prevalent in certain cases of refractory or recurrent periodontitis.^{29,30} This test is more specific than the whole genomic probe because it targets hypervariable

regions of 16S ribosomal RNA. This type of RNA contributes to increased specificity due to its sequence diversity.³¹

The major advantage of genetic probes is that viable organisms are not required. Furthermore, these tests are at least as sensitive as culture assays.³²

The Affirm probe is one of the first applications of molecular biology in an "in-office" test. It is conceivable that these types of tests may become more common in dental practices in the future. Its main disadvantages are its inability to provide information on antibiotic sensitivity and the limited number of organisms it can identify.

5) Enzyme-Based Assays

The presence of specific enzymes that may be unique to particular bacterial species can be used in diagnostic testing. One such test involves using BANA (benzoyl arginine naphthylamide), a synthetic substrate for trypsin-like enzymes associated with certain bacterial species.³³ The primary organisms of interest in this test are Pg, Bf, and Treponema denticola (Td), which are BANA positive, but it does not detect other organisms, such as Pi, that might be associated with progressing lesions. High concentrations of bacteria must be present when enzymatic substrates such as BANA are used for detection purposes,³⁴ and the test provides no information on antibiotic susceptibility. Although the BANA test cannot differentiate between the three organisms tested, positive BANA results have been correlated with probing depths and attachment loss greater than 4.0 mm, and with high numbers of spirochetes.³⁵ It has been suggested that this test may be useful for identifying the disappearance of the three organisms as a group, since all three are potential pathogens.¹⁹ The Perio-Scan[®] reagent kit is a commercial form of the BANA test, but is not yet available.

C. Diagnostic Tests Based On Host Response

Most of the studies that focused on host response factors have dealt with components of the gingival cre-

vicular fluid (GCF) and, to a lesser degree, those of serum and cells. More than 50 different indicators of the inflammatory and immune response have been identified in the GCF.²⁵ These indicators can be classified broadly into three categories: 1) enzyme activity; 2) cytokines; and 3) humoral immunity.

1) Enzyme Activity

During the development and progression of periodontal infections, the host cells release a variety of enzymes. These may be derived from polymorphonuclear neutrophils, macrophages, or fibroblasts. Studies have suggested, for example, that GCF collagenase activity increases with the severity of periodontal disease.^{36,37} The active form of the enzyme has been related to diseased sites, whereas its latent form and enzyme inhibitors are associated with healthy sites.³⁸ On a site-to-site basis, however, it has been difficult to establish a convincing correlation between enzyme levels and disease activity, probably due to the high site-to-site, person-to-person, and day-to-day variation that occurs.³⁹ Also, the quality of the sample is affected by the depth to which the filter strip is placed in the sulcus, whether the first or a subsequent sample is used, variations in tooth anatomy and tooth location, the physical properties of the filter strip, the nature of the enzyme sampled, and the viscosity of the fluid.⁴⁰

The Periocheck Enzyme Activity Kit[®] measures levels of non-specific neutral protease in GCF. Up to seven filter strip samples are placed onto a test slide containing a bovine collagen substrate and a blue dye. After an incubation period, the filter strips are mounted and scored, based on the color intensity and the percentage of the filter strip actually stained by the dye. In practice, these results are not very easily read. In unpublished studies, periodontal patients have demonstrated higher scores with the Periocheck than normal subjects, and although there is no strong evidence that this device can predict attachment loss, results suggest that it may reflect the inflammatory status of the pocket. Similar tests, like the Prognostik[®] diagnostic test kit, based on elas-

tase, and the PerioGard diagnostic kit,^k based on aspartate aminotransferase, have been developed but are not available. Another enzyme that has been studied extensively, but not yet developed into a commercial test, is B-glucuronidase, a marker for primary granule release from polymorphonuclear leucocytes.⁴¹

2) Cytokines

Cytokines are a broad family of humoral factors produced by a variety of cell types, including lymphocytes and macrophages. They mediate growth, differentiation, and tissue damage, via cellular receptors. Although the networking of these molecules is complex and not totally understood, certain cytokines are implicated in the destruction of periodontal tissues. These include interleukin-1 α (IL-1 α), IL-1 β , and tumor necrosis factor- α , which are produced by macrophages that have been activated by bacterial substances or other cytokines, including IL-1. These interleukins may have a role in regulating the expression of genes for collagenases and stromelysin. The relationship between these molecules and probing attachment loss, however, has not been determined. It has been shown that whole mouth calculations of GCF PGE₂ had a predictive value of 0.92 for probing attachment loss up to six months prior to occurrence.⁴² Disease activity for a specific site, however, could not be determined.

3) Humoral Factors

Various studies have looked at antibodies to specific antigens of periodontal pathogens.^{43,44} Reinhardt et al,⁴⁵ for example, measured all four IgG subclasses in GCF and serum. They reported that both IgG1 and IgG4 were elevated at diseased sites relative to healthy sites. Antibody levels, nonetheless, may not be reliable predictors of disease activity. Some of the difficulties encountered in studies relating antibodies to periodontal disease include a lack of knowledge concerning which bacterial antigens are relevant or biologically active, and the site-to-site variation in GCF albumin content, which is used to esti-

mate the relative contribution of serum-derived versus locally-produced antibodies.⁴⁶ At this point, we do not know if high antibody titres to a specific antigen mark a disease-passive or disease-active state. Consequently, the significance of antibodies in relation to disease activity is unclear. An example of a test using blood obtained by digi-puncture was developed by Mealey and Ebersole.⁴⁷ Called the "dot-immunoblotting technique," it is based on antibodies to Aa, Pg, and Pi. The authors determined that the test had an overall sensitivity of 93 per cent and a specificity of 87 per cent when measuring the bacteria in question, but no values were given to predict disease activity.

Clinical Application Of Diagnostic Tests

Two factors need to be considered when determining whether or not to use a diagnostic test. First, we need to identify what type of patient would benefit from such a test, particularly when we know that active periodontal breakdown occurs in only a small subset of the population in a site- and temporal-specific manner. Most periodontal disease has been treated relatively successfully without the aid of additional tests. Thus, not all patients and not all sites require diagnostic testing. Second, once we have made the decision to use a test, we must decide what we will do with the results, and how this information will affect our therapy.

A. Who Would Benefit From a Diagnostic Test?

There are patients in clinical practice who might benefit from the use of a diagnostic test as part of their periodontal therapy. New patients with periodontal disease present an opportunity to document baseline parameters. This information would be particularly useful if we could use the results of the test to follow a decision tree, such as the one outlined in **Fig. 1**, to rationalize therapeutic decisions. The presence of certain organisms associated with particular forms of periodontal disease sug-

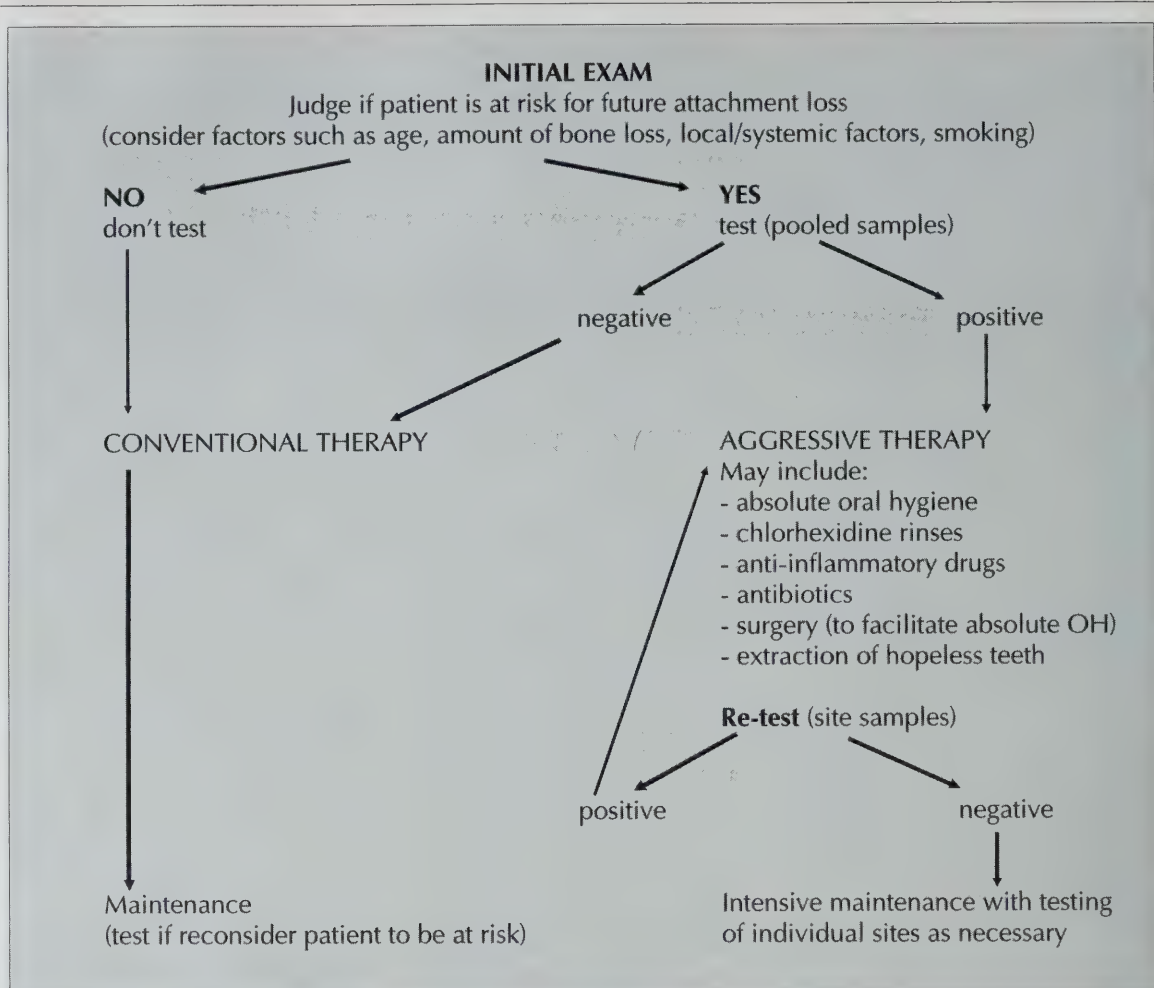


Fig. 1: Decision tree for rational in-office testing of patients (based on an ideal test for predicting disease activity).

gests that a microbial test might be useful. Detection of Aa, for example, would help to confirm the diagnosis of a suspected case of localized juvenile periodontitis (LJP).

Although the presence of Aa will not necessarily predict disease activity in LJP, its implication in the pathogenesis of this disease would suggest that additional efforts to eradicate the infection might be appropriate. One must also keep in mind that LJP patients with Aa infection have been successfully treated without antibiotics.⁴⁸ Wennstrom et al⁴⁹ showed that the absence of certain species, namely Aa, Pg, and Pi, might be a more specific indicator of health than a sensitive indicator of active disease. At a recall examination, for example, this information would be useful when deciding to institute more aggressive therapy or to maintain a patient on a conservative course. Diagnostic tests could

help also with patients who do not respond to conventional treatment, particularly when we evaluate the results of treatment, and as a means for educating patients.

Fig. 2 presents a case in which some of the diagnostic tests discussed in this paper were applied. Clearly, it is up to the clinician to decide how to use the test results. This example illustrates also that it is possible to obtain conflicting results with diagnostic tests.

B. Do We Need Diagnostic Tests?

Diagnostic tests may provide information on the severity of existing disease, and attempt to give information on the risk of future disease activity. The tests currently available are generally good at detecting what they were designed to detect. DNA probes, for example, are very sensitive and specific

tools for detecting Pg, but they are not as useful for predicting disease activity. Although a DNA probe will probably detect Pg if it is present, the presence of a putative periodontal pathogen does not ensure that the site will inevitably break down. Use of the DNA probe, or any other microbiological test, assumes that the specific plaque hypothesis is valid. Different organisms are implicated in periodontal diseases, however, and these may vary from patient to patient and from site to site. Furthermore, different successions of bacteria may cause destruction in the same site at different times. Whether specific bacteria or interacting groups of bacteria are involved in this process is not known.

Current diagnostic tests are also based on the premise that disease progression is episodic, going

Table A

Results From Microbial Analysis

Test*/Site		Pg	41MB Pi	Aa	Pg	36ML Pi	Aa
Evalusite	baseline	—	2	—	—	2	—
	six months	—	1	—	—	1	—
DMD _x	baseline	low	mod	—	—	—	—
	six months	—	—	—	low	low	—

* Scale: Evalusite (negative, 1, 2), DMD_x (negative, low, moderate, high).

Table B

Results From Enzyme Analysis (Periocheck)

	17MB	21DL	24MB	36ML	41MB	44MB	mean
baseline	1	1	1	1	1	0	0.83
six months	0	0	1	0	0	0	0.17

* Scale: Periocheck (0, 1, 2).



A: Initial presentation.



B: Sampling 41MB after therapy

Fig. 2: A Clinical Application of Three Diagnostic Tests

M.O. is a 30-year-old caucasian male who was diagnosed HIV-positive in January 1993. Upon initial examination in the spring of 1993, he was diagnosed with HIV-Periodontitis. He reported that most of the severe generalized attachment loss around his teeth occurred within the last two years, during which time he had received dental care on an irregular basis. To assist in monitoring the progress of therapy, baseline samples were taken for three diagnostic tests: Periocheck, Evalusite, and the DMD_x DNA probe.

Therapy involving regular sessions of oral hygiene instruction, scaling and root planing, prophylaxis, metronidazole, and 0.12 per cent chlorhexidine rinses resulted in a significant improvement in clinical parameters. There was a general improvement in tissue tone, as well as a decrease in bleeding on probing (from 68 per cent to 11 per cent of sites examined) and mobility (most sites either remained the same or improved one classification). The same sites previously sampled were tested again in the fall of 1993 (see **Tables A and B, Figs. A and B**).

Although there was some variation in some sites, the general improvement in clinical signs was accompanied by a decrease in microbial counts and a decrease in enzyme activity as measured by the three diagnostic tests. One major inconsistent finding, though, was found with the baseline microbial measurements at 36ML, where the Evalusite scored high (2) for Pi; the more sensitive DMD_x test scored negative for Pi at this site. This may have been due to a sampling phenomenon, a major source of error when using such tests. Both sites, however, gave consistent results in sites negative for Pg and Aa. In this case, the consistency in negative findings contrasted with an inconsistency in positive findings. The clinician must decide which information is more meaningful and whether such tests would be beneficial to the patient's treatment needs.

through periods of disease activity and quiescence. With the development of more precise methods of measuring attachment loss, this premise has been challenged. In the past, the insensitivity of the manual probing technique has favored an acceptance of the "burst" theory of disease progres-

sion. Two to three millimetres of attachment loss was necessary to diagnose active disease. Although this high threshold assures high specificity, a high number of false negatives are to be expected. For example, a true attachment loss of 1.0 mm would be diagnosed as inactive disease.

Using an automated probe, Jeffcoat and Reddy⁵⁰ demonstrated that when a small threshold (0.4 mm) for disease activity was used, the prevalence of active disease was 29 per cent, compared to a prevalence of two per cent when a large threshold was used (2.4mm). Most sites (76 per cent) showed

loss of probing attachment consistent with a continuous model for disease progression. Future evidence that corroborates a continuous paradigm of attachment loss would put the usefulness of current approaches to diagnostic testing in serious question when sites are used for testing.

On the whole, periodontal diseases have been treated very successfully using a non-specific approach, without involving diagnostic testing. The clinical reality of this achievement probably leads to much scepticism about the cost-benefit ratio of such tests, i.e., do we gain enough significant information from diagnostic testing to justify the cost of the tests and the time required to administer them?

Any new test should offer more diagnostic information than what we can presently obtain with conventional methods. For example, while bleeding on probing is not a very sensitive test for predicting future attachment loss, the absence of this sign is a highly specific test that guarantees periodontal health with high probability.⁵¹

We must also ask ourselves whether or not we are going to do anything differently because of the information obtained from the tests. There is no point in doing a diagnostic test if we do not use the test outcome to help direct therapy. It would be very useful to have a single, 100 per cent sensitive and specific test that would tell us exactly which sites will break down and how to treat them. Unfortunately, such a test does not yet exist, and probably never will.

It is evident that the complexity of the process that causes destructive periodontal attachment loss, combined with our ignorance of many of the mechanisms involved, makes it difficult, and probably impossible, to find a single marker of disease activity. In addition, our assumptions on the etiology and progression of attachment loss may be erroneous. With the current knowledge available to us, it is likely necessary to consider a combination of clinical, microbial, and systemic factors in predicting periodontal disease activity.⁵²

If we are to use current diagnostic tests, they should be applied to determine probabilities rather than certainties. Present tests should be considered as aids, not ultimate deciding factors in therapeutic treatment planning. In medicine, a variety of diagnostic tests may be done before a diagnosis is made. A single test outcome on its own may be insufficient to make a diagnosis, but rather patterns of test outcomes may determine the diagnosis. Patient attitudes must also be considered, since the average patient would probably not question a physician on the need for an electrocardiogram, but may question the dentist on the need for a DNA probe into a suspected diseased periodontal site. This is relevant to the patient, who may ultimately bear the cost for such a test since most dental insurance companies do not presently cover the fees for diagnostic testing. An objective test outcome, however, may give us more insight into the patient's needs, and presents a unique educational modality for the patient that may help to justify therapeutic decisions. Taking a medical approach to periodontal diagnosis would be a large step toward more routine use of diagnostic testing in clinical practice.

C. Future Diagnostic Tests

Present diagnostic tests have been limited by uncertainties in our knowledge of the etiology and progression of periodontal diseases. Although it is generally agreed that periodontitis is an infectious process, the presence of a particular species, in the absence of clinical characteristics, cannot reliably predict periodontal attachment loss. The complexity of the host response adds to the mystery surrounding this issue. As a result, the search for the ideal diagnostic test continues. Perhaps the next generation of diagnostic tests will examine genetic factors of the host, such as identifying genes that confer susceptibility to periodontal disease. It has been noted that the identification of a certain gene that predisposes an individual to juvenile periodontitis may be a starting point for using DNA technology to gain more information on the interaction between the host and

parasite.⁵³ It is likely that such specific approaches to periodontal diagnosis may be needed before the science of predicting disease activity can be reliably applied to patient care.

- a. Florida Probe Corp., Gainesville, FL.
- b. Bausch & Lomb Oral Care Division, Tucker, GA.
- c. Abiodent, Danvers, MA.
- d. BioResearch, Milwaukee, WI.
- e. Kodak, Rochester, New York.
- f. OmniGene, Cambridge, MA.
- g. Micro Probe Diagnostics, Seattle, WA.
- h. Oral B, Iowa City, Iowa.
- i. Advanced Clinical Technologies, Westwood, MA.
- j. Dentsply Corp., York, PA.
- k. Xytronyx, Inc., San Diego, CA.

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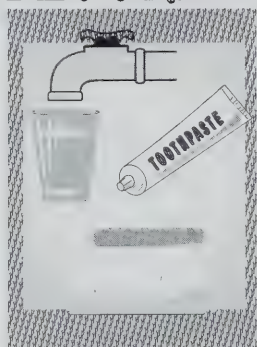
Reprint requests to: Dr. Henry Louie, 304-32463 Simon Ave., Clearbrook, B.C. V2T 5E3.

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FLUORIDE



Recommendations Regarding Total Daily Fluoride Intake for Canadians

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Introduction

The main concern of this paper is to respond to one of the five objectives defined in a research contract (number 3726) between Dr. D.W. Lewis of the University of Toronto, and Health Canada in 1992. It is based on part of the report — "Investigation of Inorganic Fluoride and its Effects on the Occurrence of Dental Caries and Dental Fluorosis in Canada" — that was submitted to Health Canada by an advisory review panel established under the contract.

The working group and the advisory review panel that undertook this project expressed great concern that it would be very limiting to restrict their investigation to these objectives alone — as important as they may be individually and collectively. In an era of increasingly complex and variable fluoride ingestion, it was their belief that, at a minimum, the status of water fluoridation and the contribution of other, often elective, sources of fluoride ingestion, needed a short, additional elaboration or summarization.

The panel believes that water fluoridation, relative to other fluoride technologies, continues to have unique advantages from the

perspectives of distribution, equity, compliance and cost-effectiveness in the reduction of dental caries prevalence for Canadians. These benefits have been heightened by recent research indicating the strong post-eruptive role that fluoride has in reducing dental caries. This is due to fluoride's ability to induce the remineralization of early carious lesions on both the crown and root surfaces of teeth.

Water fluoridation actually does more to enhance the regular maintenance of threshold levels of fluoride in the saliva, leading to remineralization, than other infrequent fluoride technologies. The probable impact of water fluoridation on root caries incidence, a condition that is likely to pose a greater problem in the future due to the aging Canadian population and a tendency toward greater tooth retention by adults, should not be ignored.

The panel recognizes that the prevalence of very mild and mild dental fluorosis has increased beyond the levels that were extant years ago, when Dean and colleagues first proposed that public drinking water should be fluoridated to optimum levels to prevent dental caries. While it is true that other sources of fluoride, not pre-

sent in Dean's time, contribute significantly to the increased levels of dental fluorosis seen today, water fluoridation also plays a role. Therefore, the panel suggested in its report that a range of optimal fluoride concentrations in drinking water should be recommended, rather than the single point estimate that is currently advocated, i.e. 1.2 ppm F.

In Canada, there are wide regional variations in dental caries prevalence. It seems reasonable that these variations should be considered in determining the optimal fluoride concentrations in each region's drinking water.

Since fluoride supplements and the ingestion of fluoride dentifrices contribute significantly to the total intake of fluoride in infants and children in the age range particularly susceptible to the development of dental fluorosis (seven months to four years), the panel believes that these elective sources of fluoride intake should be better controlled. Although the use of fluoride supplements is low (according to estimates, about 15 per cent of American children under the age of eight years receive supplements), recent Canadian recommendations, if implemented, will virtually eliminate the fluorosis risk

for this segment of the child population. Dentifrice ingestion is, however, a larger problem.

Dentifrice ingestion among children in the age range susceptible to fluorosis has been estimated to make up just over two-thirds of total fluoride ingestion in non-fluoridated communities and just under one-third in fluoridated communities. Clinical studies of pediatric dentifrices containing half (500 ppm F) the usual amount of fluoride have demonstrated dental caries reductions with young children equivalent to those found with dentifrices containing the usual fluoride concentration of 1,000 ppm F. Therefore, the panel recommends, among other methods to reduce fluoride intake in young children, the marketing and development of such low-fluoride pediatric dentifrices. It also recommends that children brush their teeth twice daily, under adult supervision, using no more than a pea-sized amount of dentifrice.

Better management of today's multiple sources of fluoride is needed. This will result in minimal levels of dental caries and dental fluorosis in the future.

The five objectives of the contract were:

- 1 Estimate the daily intake of inorganic fluoride from dental care products (i.e., dentifrices, gels, fluoride supplements, varnishes, mouth rinses, etc.) by various age groups of the population of Canada. Estimation of intake of fluoride from other sources (e.g., air, food and drinking water) is not the responsibility of the contractor. Information on these estimates will be provided by the minister to the contractor, but only for its relevance in fulfilling points two to four of this work statement. This information is not to be reproduced in reports prepared by the contractor, nor to be distributed by the contractor.
- 2 Collect and critically review the published and other accessible information concerning the beneficial effect (i.e., reduction in dental caries) on the dental health of the Canadian population associated with the total intake (all sources) of inorganic

fluoride. Examine the relevant information with the intention of identifying a dose-response relationship between the total intake of inorganic fluoride and reduction in dental caries. (Information from studies not performed in Canada should only be utilized if relevant data from investigations involving Canadians are not available).

- 3 Collect and critically review the published and other accessible information concerning the relationship between the total intake (all sources) of inorganic fluoride and the incidence of dental fluorosis within Canada. Examine the relevant information with the intention of identifying a dose-response relationship between the total intake of inorganic fluoride and the occurrence and severity of dental fluorosis for various age groups of the population of Canada. (Information from studies not performed in Canada should only be utilized if relevant data from investigations involving Canadians are not available).
- 4 Using the information derived from the second and third objectives, identify a recommended total (i.e., from all potential sources of exposure) daily intake of inorganic fluoride (on a $\mu\text{g/kg}$ body weight basis) which may maximize the beneficial effect (i.e., the reduction of dental caries) of this substance, while at the same time precluding or minimizing the adverse dental health effect (i.e., dental fluorosis) associated with the ingestion of this substance for various age groups of the population.
- 5 Discuss the relative effectiveness that various methods of delivering fluoride to the population (e.g., dentifrices, gels, fluoride supplements, varnishes, mouth rinses, drinking water) currently have with respect to the reduction of dental caries.

Study Process

To achieve these objectives, the following process, involving three phases, was set out in the contract. In phase one, a working group consisting of Dr. D.W. Banting

(London, Ont.), Dr. R.C. Burgess (Toronto, Ont.), Dr. D.C. Clark (Vancouver, B.C.), Dr. A. Ismail (Halifax, N.S.), Dr. J.L. Leake (Toronto, Ont.), and Dr. D.W. Lewis, chair (Toronto, Ont.) was established to develop review papers on objectives 1, 2, 3 and 5. In phase two, these papers were shared and discussed among members of the working group to achieve consensus. The working group then examined different approaches for recommending total daily intakes of fluoride to satisfy objective 4, and prepared a draft document on this topic. Finally, in phase three, an advisory review panel was established to review and achieve consensus on the four papers and the recommendations for fluoride intake developed in phases one and two.

With Dr. Banting serving as the overall, critical reviewer, the group considered these four reviews:

- 1 "Fluoride Ingestion from Dental Products," prepared by Dr. Burgess to meet the requirements of the 1st objective.
- 2 "Dental Caries Fluorosis and Fluorides," prepared by Dr. Ismail to meet the requirements of the 2nd and 3rd objectives.
- 3 "Ingestion of Inorganic Fluoride and Its Effect on the Occurrence of Dental Caries and Dental Fluorosis in Canada," prepared by Dr. Clark to meet the requirements of the 2nd and 3rd objectives.
- 4 "Current Effectiveness of Fluorides: A Review of the Evidence and Its Relevance to Canada," prepared by Dr. Leake to meet the requirements of the 5th objective.

As mentioned, the working group also spent much of its time developing a draft paper on the methodology to be used to meet objective 4 — the identification of a recommended total daily intake of inorganic fluoride for Canadians.

The four review papers and the draft paper were then submitted to the review panel for consideration. In addition to the six members of the working group, the panel was comprised of Dr. C. Dawes (Win-

nipeg, Manitoba), Dr. D. Kandelman (Montreal, Quebec), Dr. H. Limeback (Toronto, Ontario), and Dr. G. Nikiforuk (Toronto, Ontario). Once it had considered the four papers submitted by the working group in response to objectives 1, 2, 3 and 5, the panel forwarded suggestions for improvement to the authors. The draft paper on the 4th objective was also thoroughly discussed, including its epidemiologic, water-based approach (about which consensus was achieved), and the special considerations associated with the up-to-six-month age group due to their different feeding pattern. In response to the suggestions made by the panel, the response to objective 4 was revised and circulated among panel members for further editing, suggestions and finalization.

The remainder of this paper is a slightly edited version of the report submitted to Health Canada to meet objective 4. The papers prepared by the working group members to meet objectives 1, 2, 3 and 5 may be published separately at each author's discretion.

Recommendations Regarding Total Daily Fluoride Intake

Objective 4 involves age-related recommendations for total daily fluoride intake that maximize dental caries reductions and minimize dental fluorosis prevalence.

Although not explicitly stated, this objective concerns recommendations about optimal fluoride intake. This is not a new problem, since the optimization of fluoride intake was achieved by Dean and co-workers some 50 years ago based on their studies of the epidemiology of dental caries and dental fluorosis.^{1,2} The two dose-response curves depicted in **Fig. 1** summarize their research on 21 communities and show the relationship between lifelong continuous exposure to naturally occurring fluorides in water and dental caries prevalence on the one hand, and dental fluorosis on the other. These curves were used empirically to determine the point at which both dental caries and den-

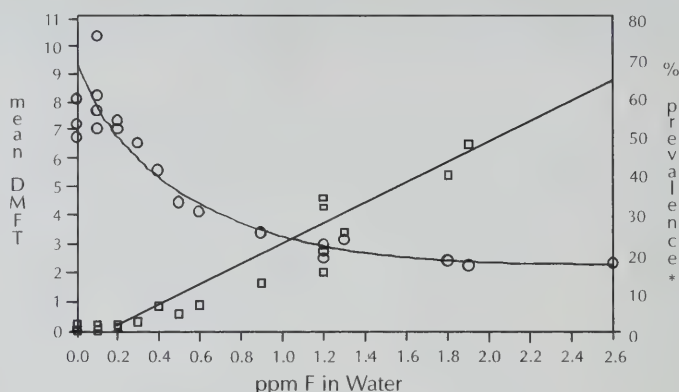


Fig. 1: Per cent prevalence of fluorosis and DMFT versus ppm F in water; aged 12 to 14 years, 21 communities, U.S.A.

* prevalence of all forms of fluorosis per community (only the "very mild" or "mild" forms were present at <1.7 ppm F).

Source of data: Dean et al. *Pub Health Rep*, 56:761-792, 1941; and 57:1155-1179, 1942 (references 1 and 2).

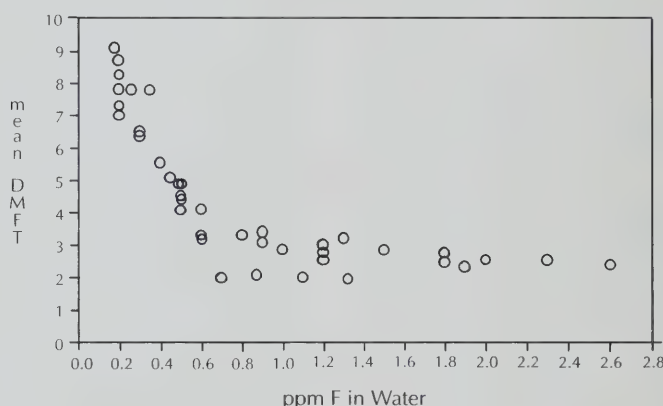


Fig. 2: DMFT versus ppm F in water; aged 12 to 14 years, 41 communities, U.S.A.

Source of data: Eklund and Striffler. *Pub Health Rep*, 95:486-490, 1980 (reference 3).

tal fluorosis levels were minimal. As **Fig. 1** shows, this occurred at about 1.0 ppm or 1.0 mg/L of fluoride in the water, which subsequently became the well-known point estimate of optimal fluoride concentration for community water supplies.

Fig. 1 also shows that at fluoride levels higher than 1.0 ppm F in the water, further caries reduction is possible, but at the expense of higher levels of dental fluorosis.

In 1980, Eklund and Striffler,³ using 1940s data from 41 communities, greatly expanded the caries-fluoride dose-response curve of Dean, particularly for communities with 0.4 to 1.3 ppm of fluoride in the drinking water (**Fig. 2**). As seen in **Fig. 2**, these additions to the communities studied by Dean

and co-workers suggest that there is only a small further reduction in dental caries prevalence as the fluoride concentration increases above 0.7 ppm.

Except for some fluoride ingested in food (0.03 to 0.27 mg, 0.04 to 0.36 mg, 0.05 to 0.45 mg, 0.06 to 0.56 mg of F per day for ages one to three, four to six, seven to nine, and 10 to 12 years, respectively: McClure, 1943),⁴ in the early 1940s the total intake of fluoride was governed by the amount of water consumed and the level of natural fluoride in this water.

However, the calculation of total fluoride intake is much more complicated today, since multiple sources of fluoride are used and ingested by most of the population. In addition to fluoridated

water, these include professional and self-applied dental products, especially dentifrices, as well as a vast array of processed foods and beverages, all of which are used in greatly varying degrees by people in both fluoridated and nonfluoridated communities.⁵ Total fluoride ingestion patterns are now much more complex.

As documented in the Clark and Ismail reviews prepared under this research contract, many Canadian children have experienced a decline in dental caries prevalence and an increase in the prevalence of the very mild and mild forms of dental fluorosis (to levels of 30 to 50 per cent). These findings indicate that Dean's curves still apply today, except that total fluoride intake, on average, is now probably equivalent to about 2.0 ppm of fluoride in water in his time (see Fig. 1).

The Clark and Ismail reviews also show that many recent studies demonstrating dose-response relationships between water-fluoride content and dental caries and dental fluorosis prevalences have been conducted.

These contemporary dose-response studies are not useful in determining recommendations of optimal fluoride intake, however, for three main reasons. First, the age ranges of the children in each study differ. Second, in contrast to the earlier data of Dean and of Eklund and Striffler (Fig. 2), these dose-response relationships use relatively few data points in the range of fluoride concentration between 0.0 and 1.0 ppm. Finally, the dose-response curves using current data are not based solely on water fluoride content, but on fluoride intake from all sources, which can greatly exceed intake from drinking water alone.⁵ The confounding effect of the other multiple, variable, uncontrolled, unmeasurable and unknown fluoride sources precludes the practical use of the contemporary water fluoride dose-response relationships described by Clark and Ismail.

Recommended Fluoride Intake

The panel concluded that Dean's original data (Fig. 1), supplemented by that of Eklund and

Striffler (Fig. 2), retain their validity because they represent the total fluoride intake at that time, other than intake through food, and because a wide range of fluoride concentrations with multiple data points were used. Therefore, these data can be used to estimate and recommend a current optimal inorganic fluoride intake. The panel also reasoned that, because of individual, regional and seasonal variations, a range of optimal fluoride intakes for each age group (rather than a single point estimate) would be more appropriate.

Using Dean's data, the panel decided that the appropriate range to use in calculating optimal fluoride intake was 0.8 to 1.2 ppm F. This choice was based on several considerations. Examination of the data points in Fig. 2 suggested that the incidence of dental caries changes little between 0.8 and 1.2 ppm. The raw data provided by Eklund and Striffler³ confirmed this, as the decline in DMFT between 0.8 ppm and 1.2 ppm (3.3 to 2.8 DMFT) was only 15 per cent. This finding, combined with the observation that dental fluorosis, fortuitously, also decreases somewhat between 1.2 and 0.8 ppm, led the committee to select this as the optimum range for calculating optimal daily fluoride intake. Interestingly, the midpoint of this range, 1.0 ppm F, is the optimal point estimate for fluoride concentration in water identified by Dean, which was subsequently used in water fluoridation studies.

The panel believes that a range of fluoride intakes, similar to those for water fluoridation, should be suggested because of the flexibility that ranges afford relative to public policy issues and decisions. At the lower end of a range of fluoride intake, the likelihood of dental fluorosis is minimized at the expense of a slightly increased dental caries prevalence. At the upper end of a range, the likelihood of dental caries is reduced at the expense of an increased dental fluorosis prevalence. These are public policy issues that can be discussed regionally by civic and public health officials, depending on the local prevalence of dental

caries. In high caries regions, higher fluoride levels may be required in the water, while in low caries regions, lower fluoride levels may be sufficient. Decisions arising from this approach are consistent with the concept of the greatest reduction of dental caries with the least risk of dental fluorosis.

In using Dean's data to develop recommendations for the range of daily optimal fluoride intake, one important (conceptual) difference must be understood. The horizontal axis of the graph depicting Dean's data was labelled ppm F in water. But in 1942, other than a small amount of fluoride ingested through food (and possibly minuscule amounts from ambient air and soil), drinking water represented the only source of systemic or topical fluoride intake. This point is critical, because the particular merit of using Dean's data for estimating the optimum range of fluoride intake lies in the fact that the relationship between fluoride intake and caries and fluorosis prevalences can be expressed in terms of total fluoride intake rather than just the concentration (ppm) of fluoride in water.

All fluoride ingested by the 12- to 14-year-old children examined by Dean came from drinking water and food, except for the possibility of very small additional amounts from ambient air and soil. We found no older references of estimated ambient air and soil fluoride concentrations on which to base current estimates. Intake of fluoride from food for this age group is estimated to be about 0.2 mg per day.^{4,6} Therefore, optimal fluoride intake from all known sources for this group in Dean's time would have been 1.08 to 1.52 mg daily (0.88 to 1.32 mg from 1.1 L⁷ of water at 0.8 to 1.2 ppm F, plus 0.2 mg from food).

The range of optimal daily fluoride intake, as determined by the panel, would therefore be 1.1 to 1.5 mg/day for children 12 to 14 years of age. By combining mean fluoride intake from drinking water (adjusted for the weight of children in kilograms) with food intake of fluoride per kilogram of body weight, a range of optimal daily in-

Table I

Calculation of Range of Optimal and Maximum Fluoride Intakes from Dean's Data

Age	Mean weight (kg)*	Daily fluid intake (L)*	Calculation of daily F intake** from fluids (µg/kg b.w.)	Calculation of daily estimated*** total F intake (µg/kg b.w.)	Calculation of daily maximum**** F intake (µg/kg b.w.)
up to six months	7	0.75	50 – 71 (see text)	50 – 71 (see text)	99
seven months to four years	13	0.80	49 – 74	56 – 81	105
five to 11 years	27	0.90	27 – 40	32 – 45	58
12 to 14 years*****	44	1.10	20 – 30	*****25 – 35	—
12 to 19 years	57	1.30	18 – 27	24 – 33	—
20+ years	70	1.50	17 – 26	32 – 41	—

* The daily fluid intakes are comparable to those of Armstrong et al⁷ for Canadians and the mean weights of children are those that have been used in federal reports.

** F intake from fluids = [(800 or 1,200 µg X fluid intake (L)*) / weight (kg)*].

*** Total F intake = F intake from fluids + F intake from food (the estimated daily intakes of F from food used for each age group have also been used in federal reports and are compatible with McClure's 1943 estimates for children up to 12 years of age).⁴ As explained in the text, the total intake for the up to six month group was calculated differently than the other age groups.

**** Maximum F intake to prevent any occurrence of moderate fluorosis (Dean) = [1,600 µg F X fluid intake (L)] / weight (kg) + F from food per kg of weight for the children in each age group. For the seven-months to four-years age group the calculation was: (1,600 X 0.8)/13 + 7 µg/kg from food = 105. For the up-to-six-month group the calculation was: (800 + 120 = 920 X 0.75 = 690/7 = 99).

***** As explained in the text, children 12 to 14 years of age as studied by Dean and co-workers optimally consumed 0.8 to 1.2 mg F in water daily plus about 0.2 mg in food.

take of inorganic fluoride on a µg/kg of body weight (b.w.) basis per day was estimated for 12- to 14-year-old children weighing, on average, 44 kilograms.⁸ This range was 25 to 35 µg F/kg b.w. per day, and is shown in **Table I** along with similarly calculated ranges for other age groups having different weights and fluid and food intakes.

The recommendations for fluoride intake of the up to six month age group required a number of special considerations, including the relatively higher skeletal uptake of ingested fluoride in this age group,⁹ and recognition that at this age only the primary teeth are susceptible to fluorosis when exposed to very high fluoride intakes.¹⁰ The anterior permanent teeth are not at risk of developing fluorosis until about 22 to 26 months of age¹¹ and later.¹² While the importance of fluoride exposure at up to six months of age in the prevention of caries has not been firmly established,¹³ there has been an in-

creased emphasis on the postoperative role of fluoride in caries prevention in recent years (see Ismail review).

The 12- to 14-year-olds studied by Dean in the early 1940s were infants in about 1926-30. Therefore, consultations and a literature search were undertaken to learn about infant feeding practices in that era. Many infants in this age group in the late 1920s and 1930s were breast fed,¹⁴ and consequently ingested very little fluoride.¹⁵ In the late 1920s and 1930s, however, the use of evaporated milk formulas increased.¹⁶ Also, many babies who ceased breast feeding before six months of age were likely put on evaporated milk formulas initially rather than directly on cows' milk. The evaporated milk given to infants up to six months of age in 1926-30 (i.e., the 12- to 14-year-olds who were studied by Dean) was apparently diluted with drinking water on a one-to-one basis. (At least this was

the case just before 1938.¹⁷ No references citing this ratio were found for 1926-30.)

In 1985, undiluted milk-based formulas (liquid concentrate) from the United States contained an average concentration of 0.12 mg F/L according to Ekstrand.¹⁸ The concentration of F in the evaporated milk before dilution in 1926-30 is unknown. If it is assumed to equal the 0.12 mg F/L reported by Ekstrand (it was unlikely to have been higher since bioavailability¹⁸ has not been considered), the fluoride intake of the up to six month age group using 0.75 L of milk-based formula, diluted with water containing 0.8 to 1.2 ppm F on a one-to-one basis, can be estimated. In 1.0 L of formula, there would be 0.4 or 0.6 mg F due to the concentration of F in the drinking water used to dilute the formula, plus 0.06 mg F in the undiluted formula. Thus, the total fluoride in 1.0 L of formula would be 0.46 or 0.66 mg. The fluoride in

Table II

Summary of Daily Recommended and Maximum Fluoride Intake

Age	Mean weight (kg)*	Recommended daily total F intake (µg/kg b.w.)*	Maximum daily F intake (µg/kg b.w.)*
up to six months	7	3 – 71	99
seven months to four years	13	56 – 81	105
five to 11 years	27	32 – 45	58
12 to 19 years	57	24 – 33	—
20+ years	70	32 – 41	—

* Except for the lower figure in the range for the up to six month age group which is due to Ericsson¹⁵, these values are derived from the **Table I** calculations.

0.75 L of formula would then be 0.35 or 0.50 mg. For a 7.0 kg infant, this intake represents 50 to 71 µg F/kg b.w. (**Table I**).

In addition to the estimated ranges of optimal total fluoride intake, **Table I** gives the maximum fluoride intake consistent with the prevention of moderate levels of dental fluorosis in children under 12 years of age. This maximal level was derived from careful examination of Dean's early work, and is calculated based on 1.6 mg/L of fluoride in water plus the fluoride in food.

The calculations of the optimal and maximal fluoride intakes shown in **Table I** are based on the estimated total fluoride intake from fluid and food in Dean's time. These estimates of total daily fluoride intake, which were safe and effective in Dean's era, should still apply today provided that all sources of fluoride intake are considered, including dentifrices, mouthwashes, supplements and professional topical applications, as well as fluids and food.

Table I was the working table used to derive recommended optimal and maximal fluoride intakes. **Table II** more concisely summarizes the key findings of **Table I** regarding the recommended total and maximal daily fluoride intakes for each age group. With the up-to-six-month age group, it is vital to consider whether the infant is bottle or breast fed, and take into account the very low fluoride con-

centration in human milk,¹⁵ which tends to be similar in both fluoridated and non-fluoridated communities.¹⁹ Available data for this special age group do not allow the specification of a minimum fluoride intake, to achieve dental health, that is above the fluoride intake received by breast-fed infants. Therefore, this intake, 3.0 µg F/kg b.w.,¹⁵ is listed in **Table II** as the lower limit for the recommended range of daily fluoride total intake for the up-to-six-month age group.

The range of recommended fluoride intake shown in **Table II** merely reflects the range (0.8 to 1.2 ppm F in fluids, plus F intake from food) used in the calculations. It is important to stress that there is great variation in daily fluoride intake, among individuals and even within individuals, beyond that tabled for the means of 0.8 and 1.2 ppm fluoride. This variation is not shown in **Table II**. However, while it does not include individual variation, **Fig. 3** does show diagrammatically the variability among groups of 20 kilogram children who are about four years old.²⁰

The factors giving rise to this group variability are: three different levels of fluoride in the drinking water; minimum and maximum ingestion of fluoride within each population group, depending on water consumption; and differential intake of supplements, toothpaste, fluids, and food among

all six of the groups. **Fig. 3** is intended to emphasize the variability that may occur. It is not intended to imply that any of these intakes is optimal.

Validity of Recommendations

Although the recommended inorganic fluoride intakes for the age groups in **Table II** can not be validated without prospective studies, their reasonableness can be assessed indirectly by comparing them with several frequently cited standards. These include the traditional intake standard of 50 to 70 µg/kg of body weight²¹ and those of the U.S. National Academy of Sciences,²² as well as recently published estimates of optimal fluoride intake.¹⁸

Although its origin and scientific basis have been questioned,²¹ the general standard of 0.05 to 0.07 mg (or 50 to 70 µg) of fluoride per kilogram of body weight per day has traditionally been considered a useful guideline for optimal fluoride intake in children.⁵ The recommended intake range shown in **Table II** for the age group at greatest risk of dental fluorosis, children seven months to four years of age,^{11,12} is 56 to 81 µg/kg b.w./day. The upper limit of this recommended range slightly exceeds the generally applied standard of 70 µg/kg b.w./day, as does the recommended range of the up-to-six-month age group. All of the recommended ranges for the older age groups identified in **Table II** are conservatively below the standard of 50 to 70 µg/kg b.w./day.

Based largely on previous information about dietary intake of fluoride, the U.S. National Academy of Sciences estimated in 1980 that daily intakes of fluoride of 0.1 to 0.5 mg F for infants less than six months of age; 0.2 to 1.0 mg F for infants six to 12 months of age; 0.5 to 1.0 mg F for children one- to three-years-old; 1.0 to 2.5 mg F for children four- to six-years-old; 1.5 to 2.5 mg F for children from seven-years-old to adulthood; and 1.5 to 4.0 mg F for adults, were adequate and safe.²² Using typical mean weights for each of these age groups gives daily fluoride intakes,

on a body weight basis, of: 14 to 71 $\mu\text{g/kg}$ for up-to-six-month-olds; 23 to 118 $\mu\text{g/kg}$ for six- to 12-month-olds; 42 to 83 $\mu\text{g/kg}$ for one- to three-year-olds; 40 to 100 $\mu\text{g/kg}$ for four- to six-year-olds; 30 to 50 $\mu\text{g/kg}$ for seven-year-olds to adulthood; and 21 to 57 $\mu\text{g/kg}$ for adults. Although the age groups above six months used in **Table II** differ from those used by the National Academy of Sciences, the advisory panel's recommended total fluoride intakes for these age groups are similar. However, it should be noted that the upper figures of the ranges provided by the advisory panel are slightly lower than the academy's, and much lower for the four- to six-year age group.

Based on the work of Ekstrand,¹⁸ which indicates that "the upper limit of fluoride intake for young children should be about 0.05 mg per 100 calories of energy intake,"²¹ in 1992 Burt estimated a range of daily fluoride allowances for 10 age groups of children (three, six, 12 months . . . six, eight years). For the combined group from six-months to four-years of age, the recommended range was 40 to 70 $\mu\text{g F per kg b.w. per day}$. For the same age group, as seen in **Table II**, the panel's recommendations for optimal fluoride intake are 56 to 81 $\mu\text{g F per kg b.w. per day}$. This is similar to Burt's range, but somewhat higher in its upper limit. However, Levy⁵ later calculated that Burt's total daily fluoride requirements, derived from energy allowances, are only close to the requirements of children of very slight stature, i.e., those at the 10th percentile of weight. Since the panel's recommended optimal daily fluoride intakes are based on average weights, the upper limit suggested for children seven months to four years of age in **Table I** seems to have a rational explanation. Burt's calculated ranges for children three and six months old were, respectively, 50 to 70 $\mu\text{g/kg b.w.}$ and 40 to 60 $\mu\text{g/kg b.w.}$ for the 90th and 10th weight percentiles.

There is another way to evaluate the recommended fluoride intakes shown in **Table II** that is especially relevant for the age group of seven months to four years, which is at high risk of developing fluorosis.^{11,12} This is to compare

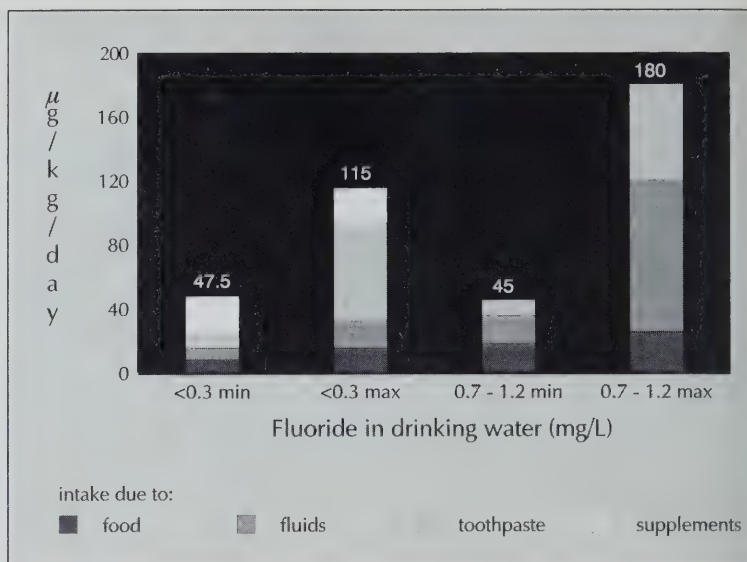


Fig. 3: Minimum and maximum total daily fluoride intakes in four-year-olds residing in regions with different water fluoride levels.

Data are for children of 20 kg weight and approximately four years of age.

Source of data: Review of fluoride benefits and risks, Table 10, p. 16 (reference 20).

these intakes with the upper limit of fluoride intake during infancy that is believed to be associated with a high probability of fluorosis. Fluorosis is considered likely following intakes of 100 μg of fluoride per kilogram of body weight daily during infancy.²³ The upper limits of the range of recommended intakes for infants up to six months of age, 71 $\mu\text{g/kg b.w./day}$, and for children seven months to four years of age, 81 $\mu\text{g/kg b.w./day}$, as seen in **Table II**, are well below the alleged 100 $\mu\text{g/kg b.w./day}$ fluorosis-inducing threshold. Interestingly, despite our independent and different method of calculation, the maximum recommended intakes to prevent moderate dental fluorosis for the up-to-six-months and the seven-months to four-years age groups are just about 100 $\mu\text{g/kg b.w. daily}$ (**Table II**). All older age groups are well below this.

Despite some minor discrepancies described and explained above, the panel believes that the assumptions and model employed to recommend optimal daily inorganic fluoride intake provide valid and reasonable estimates for the indicated age groups of Canadians.

Because of the special nature of the feeding situation of the up-to-six-months age group, the panel

compared the actual fluoride intakes estimated by other researchers for infants up to six months of age with both its own and other recommendations. Data adapted from Burt,²¹ who summarized estimates of fluoride intake from food and fluids for North American children, were compared with the upper limits of: the general standard (70 $\mu\text{g/kg b.w./day}$); the National Academy of Science (71 $\mu\text{g/kg b.w./day}$); Burt (70 $\mu\text{g/kg b.w./day}$ at three months and 60 $\mu\text{g/kg b.w./day}$ at six months); and the panel (71 $\mu\text{g/kg b.w./day}$).

Five estimates — two of which were Canadian — of the nine mean intakes from fluoridated areas (where fluoride intakes are understandably higher) going back 14 to 20 years exceeded, in the majority of the cases, the upper limit of these standards. This finding suggests the possibility that these standards are, in fact, too low, and emphasizes the problematic nature of the basis for the calculations used to derive the recommendations for infants.

Other Considerations

It is important to keep in mind that recommendations about optimal fluoride intake from all sources involve trade-offs. Thus,

just as in Dean's time, the optimum range of daily fluoride from all sources that was used in the panel's calculations assumes that mild dental fluorosis will occur in a proportion of the population. At the range of fluoride intake used by the panel, extrapolations from **Fig. 1** suggest that the prevalence of very mild and mild fluorosis will be from 16 to 26 per cent, on average. Thus, recommended optimal intakes of fluoride from all sources inherently accept a low prevalence of the milder forms of fluorosis as a trade-off to greatly reduced dental caries.

Another important consideration is the relative contribution that the different sources make to total fluoride intake, and the discretionary nature of some of these different sources. **Fig. 3** can be used to describe the impact of different sources of fluoride intake, and suggests that fluoride supplements for those in communities with low levels of fluoride in the water (0.3 ppm), and to a lesser extent fluoride dentifrices, can make significant contributions to total fluoride intake in the "minimum" fluoride exposure group. With the "maximum" group, fluoride dentifrice ingestion alone, or in combination with fluoride supplements, can make, proportionately, an even greater contribution to total fluoride intake. In each case, these two fluoride agents account for about three-quarters of total fluoride intake. In the regions depicted in **Fig. 3** that have an optimal range of fluoride in the drinking water (0.7 to 1.2 ppm), the contribution of dentifrice ingestion to total fluoride intake is less dramatic. However, it still represents about one-third of total intake for the "maximum" group. Clearly, modifying the use of these two discretionary sources of fluoride intake would have a significant impact on "average" fluoride ingestion by some population groups (in this case four-year-olds). It is equally evident that it would be less easy to modify the fluoride intake from food.

These findings represent more than just diagrammatic representations of the actual situation of four-year-olds in the United States,

the source of **Fig. 3**. Combining the findings of Burgess for the seven-months to four-years age group (presented in the review he prepared under this research contract) with currently unpublished data on fluoride intake from food and water for the same age groups living in fluoridated and non-fluoridated regions gave similar results. In the non-fluoridated region, the inclusion of ingested dentifrices increased the total amount of ingested fluoride by 200 per cent. Just as in **Fig. 3**, the results were less dramatic in the fluoridated region. Nevertheless, this was still significant, since total fluoride intake was increased by 37 to 50 per cent when the dentifrice ingestion reported by Burgess was included.

Recognizing the large contribution that discretionary sources can make to total fluoride intake, the April 1992 Canadian Workshop on Fluorides²⁴ made recommendations to reduce fluoride intakes from dentifrices. Among other things, it suggested that smaller, "pea-size" amounts of dentifrices and pediatric dentifrices containing reduced fluoride (e.g., 500 ppm F rather than 1,000 ppm F) be used. The workshop also recommended a new dosage schedule for fluoride supplements that, if followed, would greatly reduce fluoride intakes from this source. This new schedule was approved by the Canadian Dental Association in 1993. ■

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The State Of Oral and Dental Health Of the Homeless and Vagrant Population Of Montreal

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ABSTRACT

Not much is known about the state of oral and dental health of homeless and vagrant people in Montreal. However, a study conducted during April 1993, in conjunction with dental health month, has made it possible to undertake a better evaluation of their oral health status and to identify ways of making dental treatment available to them. Once the oral health status of this population is known, the official body responsible for homeless and vagrant individuals, the "Régie régionale Montréal-Centre," can be given possible solutions for their treatment and care. Most of the homeless are welfare recipients and have access to some basic benefits from this source. One of these benefits is free access to all assured basic dental services. These services are available after a six-month waiting period, and are provided by a dentist of the homeless person's choice. At the beginning of this study, the authors hypothesized that homeless people would prefer to be treated in the hostels and shelters where they sleep, which is currently the situation in Boston. But in 65 per cent of cases, their responses to a questionnaire administered as part of this study were quite different, and

indicated that they would prefer to visit a private dentist of their choice. However, there is another important group (35 per cent) who wish to receive dental treatment in the hostels they presently frequent. Any proposed solution should take into consideration both groups of homeless and vagrant persons.

SOMMAIRE

Nous connaissons peu de choses sur l'état de la santé bucco-dentaire des itinérants et des sans-abri de Montréal. Une étude menée en avril 1993 lors du mois de la santé dentaire nous a aidé à en faire une meilleure évaluation. Des solutions seront envisagées afin de leur rendre les traitements dentaires plus accessibles. Une fois le problème analysé, des solutions seront mises sur pied avec l'aide de la Régie régionale Montréal-Centre. La plupart des itinérants et des sans-abri bénéficient du Bien-être social et de ses privilèges. Un de ceux-là est, qu'après une attente de six mois, cette population a droit à la majorité des services dentaires de base qui sont assurés (gratuits) chez le dentiste. L'hypothèse de départ voulait que les itinérants et les sans-abri répondent qu'ils préfèrent se faire traiter, comme à Boston, dans les "refuges" qu'ils

sont habitués de fréquenter. Cependant, les réponses reçues nous révèlent que la majorité (65 p. cent), au contraire, préfère aller en cabinet dentaire privé chez le dentiste de leur choix. Mais il reste encore une importante partie d'entre eux (35 p. cent) qui préfère se faire traiter sur place. Bref, deux solutions sont à mettre sur pied afin d'améliorer l'accessibilité aux services dentaires auprès de ses personnes.

Key Words: Homeless Persons, Vagrants, State of Oral Health, Accessibility to Dental Treatments.

Mots-clé: Personnes itinérantes et sans-abri, état de santé bucco-dentaire, accessibilité aux traitements dentaires.

Introduction

Based on past studies, it is well known and documented that the homeless population have more health problems than the general population.¹ Their lifestyle, which denies them easy access to both adequate oral hygiene facilities and health care, dictates that their chances of developing oral or dental diseases such as dental caries, periodontal disease or even oral cancers must be higher than normal.

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The oral and dental health of the homeless and vagrant population of Montreal is not known. However, it has been reported that the homeless in the United States have very poor dental health.² Furthermore, conditions originating in the mouth lead the list of health concerns among vagrant populations with major psychiatric problems (71.7 per cent among males, 73.8 per cent among females).³

Population Of Homeless and Vagrants

It is difficult to determine the vagrant and homeless population of Montreal with precision, given that individuals in this group have no fixed address and are quite mobile at any given time. However, it has been estimated that this population comprises 10,000 to 15,000 people in the Montreal region in any given year.⁴ The number of dental personnel available to look after this special-needs population is insufficient, and the existing public health personnel are more concerned with other medical problems, be they physical, psychological or social.¹

Categories Of Vagrants and Homeless

According to the Ministry of Health and Social Services of Quebec, three categories of vagrants and homeless people exist in Montreal:

- 1 The chronic homeless person who has not had a stable or permanent home for a long period of time (at least 12 months).
- 2 The intermittent homeless person who goes back and forth periodically from a fixed address to the street.
- 3 The occasional homeless person who, for one reason or other, finds himself homeless at a precise moment in time, even though he or she usually has a fixed address.⁴

The notion of vagrancy has evolved greatly over the last few years. Today, the "shelters" that cater to this population face daily pressures to meet their needs. This is due to both the significant increase in the size of the homeless and vagrant population (Russell

Wilkins,⁵ a research associate in the department of community health of the Montreal General Hospital, estimated it to be 10,000 in 1987), and the constantly changing type of vagrant person. More and more young people (under 30 years of age), single females or women at the head of single parent homes are now on the street.

Dental Profile Of the Vagrants and Homeless In Montreal

A study was conducted during April 1993, in conjunction with dental health month, by four dentists who are members of the Public Health Unit's Preventive Dentistry Service at Verdun Hospital and the South-West Mobile Dental Health Clinic. Toothbrushes, denture adhesives, etc., were provided to a group of vagrant and homeless patients.

This study took place among the people who live in a group of 10 shelters in Montreal: Salvation Army, Abri de l'espoir, Accueil Bonneau, Refuge des Jeunes, Chez Doris, Auberge Madeleine, Maison du Père, Mission Bon Accueil, Old Brewery Mission, and Résidence du Vieux Port.

The shelters are all located in downtown Montreal. During April 1993, a sample of 171 people agreed to undergo oral examinations (127 men, 44 women). These examinations consisted of two parts:

- 1 To ascertain their medical and dental history, their perceived dental needs, and finally the location where they would prefer to go to receive any immediate dental services, participants were asked to complete a dental questionnaire. Survey results were then compared with the actual diagnosed needs.
- 2 A dental examination was provided to each participant to screen for any dental disease, and the results were recorded by the four dentists who took part in the survey.

Results Of the Dental Questionnaire and the Dental Examination

In all, 85 per cent of the patients seen during the course of the study required dental treatment of one kind or another. It also became very evident that it was important for dental services to be made more available and more accessible to this population. Only six per cent of the sample felt that their oral or dental health was not important. Perhaps this latter group was unaware that free dental care is available to them through the Quebec Health Insurance Board, providing they are registered as welfare recipients. However, 58 per cent of the sample had used the services of the board. The complete breakdown of the results from the questionnaire and dental examinations is shown in **Tables I and II**.

Discussion

Many factors influenced the participation of the patients in this study, since it only included volunteers, and many potential candidates were not interested in participating. The first factor, obviously, is the importance that the participants placed on the maintenance of good oral health. Even though almost 50 per cent of them brushed their teeth daily, a great disparity existed between their actual dental needs (determined by the examinations) and their perceived needs.

There was no financial barrier to dental care for most participants since, as welfare recipients, their basic dental needs were provided free of charge (after a six-month waiting period). The average length of time that they had been on the street was about four years, but many had not consulted a dentist for more than five years.

The most unexpected result was that the majority of study participants (65 per cent) indicated that they would prefer to be treated by a dentist of their choice in downtown Montreal rather than by a dentist visiting them in the shelter where they lived. This result is far different

Table I
Results Of the Questionnaire

Question	No. of Respondents	Response	
When did you visit the dentist last?	142	6 months or less	21%
		6 months to 11 months	8%
		one year ago	18%
		2 to 4 years	18%
		5 years or more	26%
Who paid for treatments?	127	Third Party	58%
		Patient	38%
		Don't know	3%
Do you wear a denture?	164	Yes	47%
		No	57%
Who paid for your denture?	53	Welfare	47%
		Patient	26%
		Insurance	11%
		Other	15%
How often do you brush your teeth?	134	Twice daily	42%
		Daily	22%
		Every second day	12%
		Twice a week	7%
		Once a month	3%
		Every six months	1%
		Never	7%
		Do not know	2%
Do you use dental floss?	131	Yes	23%
		No	76%
		Don't know	1%
Do you own a tooth brush?	104	Yes	64%
		No	36%
How long have you been a vagrant?	35	Average	4 years
Do you need dental care? (Tooth decay or gum disease.)	127	Yes	61%
		No	38%
Would you like to visit the dentist regularly?	135	Yes	85%
		No	12%
		Don't know	4%
Where would you like to be treated?	113	Mobile dental clinic	35%
		Private dental office	65%

from the one obtained by a similar study of vagrants and homeless people in Boston.⁶ In the Boston study, most of the patients opted for a mobile dental clinic that would travel from shelter to shelter using portable dental equipment to provide treatment. In Montreal, only 35 per cent preferred this choice. The difference may be explained by the fact that dental services are free for welfare recipients in Quebec, which greatly favors the accessibility to dental care for this underprivileged population.

Welfare Eligibility

In Quebec, the large majority of itinerants and vagrants do not have steady employment and are therefore eligible for welfare payments. To receive aid, however, potential recipients must prove to the Ministry of Health and Social Services that they have a stable address. Normally, because itinerants and vagrants, by definition, are very mobile and have no fixed address, they would be ineligible for welfare payments. But a recent government directive (DGRTQ-G-NO-92-077, July 1992) added

some flexibility to the regulations by permitting welfare candidates to receive benefits (including free basic dental care) without any proof of identity, providing the director of the CTQ (Conseil du Travail du Québec) authorizes the first cheque to be issued.⁷

Homeless people with a stable address — often the address of the community shelter where they sleep — can receive welfare payments. However, many vagrants have no idea how to apply for benefits through the Social Welfare office unless someone shows



them how to do it. This is one of the tasks that must be performed by the volunteers and staff who work in the shelters with these people.

Attitude Of Dentists Toward Vagrants and Homeless Persons

Even though welfare recipients are eligible to receive free treatment in dental offices, it appears that most dentists are reluctant to see them in their private offices — at least not during normal office hours when their regular patients are present. There are several reasons for this. Vagrants and homeless people often have a repulsive appearance and poor personal hygiene. The fear of losing regular patients often forces a dentist in private practice to refer vagrant and homeless patients to another dentist or, in most instances, to public clinics in a hospital setting, where such dental services are offered.

Vagrants and Homeless People Require an Understanding Dentist

Vagrant and homeless people require a certain type of dentist to meet their needs. This dentist must be someone they will readily confide in about their oral and dental care. Understandably, they only feel comfortable with someone who shows them compassion and empathy, has experience treating them, and understands their medical, psychological and social problems. These qualities are essential to win their confidence.

Plans To Render More Accessible Dental Services To the Vagrant and Homeless Population.

We now know first hand that the level of oral and dental health in the vagrant and homeless population is poor. Based on this study, 85 per cent of these individuals require dental services. There is no monetary barrier to prevent the majority of them from receiving dental services, since they are welfare recipients. However, the vagrants and homeless surveyed in this study indicated that they

Table II

Results Of the Dental Examinations (n = 169)

Sex distribution	Female	26%
	Male	74%
Age distribution	< 20 years	2%
	20-30	21%
	30-40	31%
	40-50	15%
	50-60	20%
	60-70	7%
	> 70	4%
Dentate patients	Total carious surfaces visible to the naked eye	233
	Total of missing teeth	851
	Total of filled teeth	168
Edentulous patients	Upper arch only	19
	Lower arch only	1
	Upper and lower arch	24
	Partially edentulous that do not wear upper or lower denture	86

would rather not be treated in the soup kitchens or shelters they visit (65 per cent versus 35 per cent).

Possible solutions to this problem are: first, prepare a list of downtown Montreal dentists who would accept members of the vagrant and homeless population as patients, along with any special conditions to be met; second, distribute this list to the various soup kitchens and shelters so that vagrants and homeless people could be made aware of the participating dentists; third, establish a mobile dental clinic, using portable dental equipment, so that dentists could provide the needed services directly to those who prefer to be treated in the various shelters and soup kitchens.

Conclusion

The oral and dental health of vagrants and homeless people in Montreal is poor. This population does not have accessibility to dental services. However, they are almost all welfare recipients and have the right to free basic dental services.

It is unreasonable to expect that these people will take charge of their situation as far as dental services are concerned. They need help. As a starting point, they should be supplied with toothbrushes, denture brushes, tooth-

paste or denture cleaners, and instructed on how to use these items properly. This work could be performed by the existing public health agencies in Montreal in collaboration with the manufacturers or distributors of these products.

The priorities of vagrants and homeless people are based on far more urgent needs such as eating, clothing themselves and finding a place to sleep, especially during the winter months. When homeless and vagrant people in the United States³ were asked to describe their health problems, 21.4 per cent cited dental concerns. Of these, 10.3 per cent mentioned a dental problem without specifying exactly what it was. Among those who recognized a specific dental problem, 4.4 per cent suffered from tooth aches or dental caries, one per cent needed a denture, denture repairs or adjustment, 5.3 per cent had periodontal problems or non-specific dental problems, and 0.4 per cent needed unspecified dental services. These perceived needs were very different from those diagnosed in a similar project in Boston.⁸

The sample of Montreal vagrants and homeless people participating in this study shows that important dental problems exist among this group. Since they are nearly all eligible to receive wel-

fare and free dental treatments, it should be possible to find dentists having the necessary qualities and aptitudes who would agree to treat these people in private dental offices or in shelters using portable dental equipment. ■

Acknowledgements: We would like to thank the following companies for their participation in this project: Block Drug (Canada) Ltd., for providing Super Wernet's Denture Adhesive and Sensodyne F toothpaste; Colgate-Palmolive Canada Inc., for Colgate Toothbrushes;

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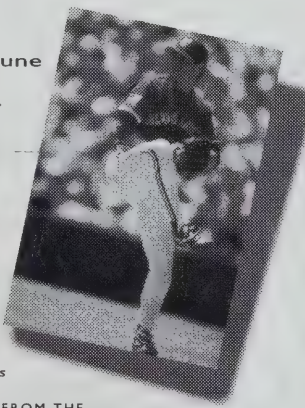
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Technology Assessment in Dentistry

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ABSTRACT

Technology, in the context of dental health care, is a term that can encompass systems such as water fluoridation, clinical procedures such as sealants, or clinical protocols such as antibiotic coverage of patients with a history of heart surgery. Similarly, the term technology assessment (TA) describes a multidisciplinary, scientific process established to guide policy on the adoption and distribution of health technologies. While this process is already well established in medicine, it is just beginning in dentistry. As such, TA is still evolving in dental care in terms of methods and process. TA is required to guide the content of curriculum and standards of practice in a rapidly changing dental environment. It should precede the adoption or deletion of both technologies and of writing practice guidelines. TA makes it possible to shed inappropriate technologies or the inappropriate application of existing technologies, which may free resources to pay for improvements in the dental care we offer.

SOMMAIRE

Dans la prestation des soins de santé dentaire, le mot technologie recouvre des systèmes comme la fluoruration de l'eau, des procédures comme les obturations et des protocoles cliniques comme l'antibiothérapie prophylactique

pour les patients ayant fait l'objet d'une cardiologie. Pareillement, l'expression évaluation des technologies désigne une démarche scientifique multidisciplinaire conçue pour orienter les politiques touchant l'adoption et l'ordre des technologies médicales. Déjà en vigueur en médecine, cette démarche commence à peine à être suivie en dentisterie. Aussi y fait-elle l'objet d'une évolution sur le plan des méthodes et des procédures. L'évaluation des technologies est nécessaire pour déterminer le contenu des cours et les normes d'exercice dans un milieu dentaire qui évolue rapidement. Elle doit précéder l'adoption et l'élimination tant des technologies que des méthodes visant à formuler des lignes de conduite dans l'exercice de la dentisterie. Elle permet aussi de rejeter toute technologie inadéquate ou celles qui le deviennent, libérant ainsi des ressources qui peuvent servir à améliorer les soins dentaires que nous offrons.

Introduction

Technologies in dentistry are the procedures, drugs and equipment, or any combination of these, used by dental care providers or others for the purpose of improving oral health. In dentistry, technologies include large systems, such as water fluoridation; specific clinical procedures, such as dental sealants or

fluoride varnishes; or clinical protocols, such as antibiotic prophylaxis for patients with a history of heart surgery. Technology assessment (TA) involves comparing two or more technologies with respect to benefit, harm and costs.

Technology assessment is not a new concept. All practitioners consider and weigh the expected benefits, potential harm and expected costs before recommending either public programs or specific courses of care for patients. In situations where technologies are stable, disease levels are high, resources are readily available, and individuals in society share common values and expectations, such recommendations may be made with a high degree of confidence. Using the knowledge base, obtained during their undergraduate training, plus their experience in clinical settings to make informed recommendations.

In the 1990s, however, none of the above conditions apply in Canada. Specifically:

- New technologies are being invented and promoted (e.g. fluoride varnishes, anti-calculus dentifrices, dental esthetics, dental implants);
- Old technologies — rightly or wrongly — are falling into disfavor because they are said to produce less benefit or more harm than originally believed (e.g. tooth polishing before topical fluorides,¹ dental amalgam,²



fluoride supplements,³ and some forms of periodontal surgery⁴;

- Disease levels are falling or were never as incident as believed, requiring a reassessment of the net benefit of traditional technologies (e.g., six-month check-ups,⁵ frequency of diagnostic radiographs,⁶ topical fluorides — especially in low-risk communities or children⁷); and
- Ethical considerations (increasingly backed-up by legislation), which require dental care providers to present clients with accurate probabilities of benefits, risks and costs for each care option, thereby allowing clients to make informed choices.

Thus, information is needed by dental practitioners to enable them to answer these questions:

- Should I adopt a new technology into my practice and, if so, under what circumstances do I recommend it?
- Should I stop using an old technology for some or all of my patients, and what should I tell people who are accustomed to receiving it?; and
- What is the point at which even effective technologies are no longer worth doing?

The relevance of the last question for practitioners is well illustrated by the problem of accurately informing parents about the benefits of continuing topical fluorides when their child has not had a new cavity for one, two, three or more years.

To this point, we have focused on the need for individual dentists to assess dental technologies. It must be made clear, however, that this process has wider application, in particular for:

- Dental educators planning undergraduate and specialty training programs;
- Planners and accreditors of continuing dental education programs — to ensure that current practitioners learn about appropriate proven new technologies and the “best” application of old ones;
- Dental licensing bodies, which have a responsibility to ensure

that practitioners use effective technologies and apply them well; and

- Planners estimating the profession’s human resource requirements, since, for example, there may be less need for dental personnel in the future if new technologies produce better results with less clinical time.

To date, technology assessment has been more highly developed around issues related to the provision of medical care than in dentistry. Although medicine and dentistry have parallel interests in training, licensing and planning, the escalating costs of national health care programs have fostered the conduct of formal medical technology assessments in Canada, the United States and Europe.⁸⁻¹²

Definition Of Technology Assessment

As defined by the Ontario Ministry of Health, technology assessment is the “scientific investigation of new technologies to determine their appropriate clinical applications, and to assist in establishing guidelines for their distribution and rational use . . . (Such) research studies compare new and existing technologies from the perspectives of cost-effectiveness, patient safety, and patient outcomes (morbidity, mortality), and identify the treatment modalities which the new technologies can replace.”

In this context, technology encompasses all devices, procedures, drugs and systems used in health care delivery.¹³

Two points from this definition of technology assessment need to be emphasized:

- It is a scientific process assessing outcomes, cost-effectiveness and safety; and
- It is designed to respond to policy questions about the need for, and appropriate use of, new technologies.

The following points should also be considered, however:

- All technologies, combinations of technologies and new applications of existing technologies can and *should* be assessed¹⁴;

- The evaluation process uses a multidisciplinary approach that includes epidemiology, economics, ethics, clinical specialties, sociology, psychometrics, and others; and
- The questions and answers provided by the assessment are relevant, not just to policy makers, but also to individual practitioners.

Methods Of Technology Assessment

Technology assessment consists of comparing two or more technologies on the following criteria:

- Estimation of expected benefits
- Estimation of expected harm
- Calculation of expected net benefit/harm
- Calculation of expected costs
- Calculation of anticipated cost-effectiveness

Estimation Of Expected Benefits

The benefits of health care are usually considered to flow to patients, their families and to society. For patients, the best evidence of clinical benefit comes from a randomized controlled trial (RCT) or through techniques known as meta-analysis, which involve the statistical pooling of results of several trials. The outcome of a RCT is an estimation of the expected benefit minus harm among ideally-selected and relatively compliant patients treated according to a strict protocol.

For society, where the interest lies in determining the expected benefits of technology in real life, assessment studies are often grouped under the rubric of effectiveness or cost-effectiveness studies, or of health services research. Four types of such research are: comparisons of the outcomes of two or more interventions intended to treat the same disease; studies on alternate uses of one specific intervention in a health care setting; decision analyses in clinical guidelines; and economic modelling that may help to determine whether the intervention is worth adopting at all.



To study the expected outcomes of two or more interventions, the benefits need to be measured using a common "yardstick" or outcome measure. In medical care research, these measures can be additional life years, additional functional ability, or an instrument that attempts to combine both of these measures, such as quality-adjusted life-years (QALYs) or healthy years equivalent (HYEs). These approaches recognize that an intervention providing additional life years with limited ability may not be valued as highly as an intervention that restores full function for the same number of years. Other measures used to compare the benefits of different technologies might be "pain free days," "work loss days" or changes in people's ability to perform the activities of daily living. Still other measures may assess the clients' satisfaction or perception of improvement.

In dentistry, we have begun to develop a few such measures. Birch¹⁵ has suggested the use of quality-adjusted tooth years (QATYs), and others are working on functional (chewing) indices¹⁶ and oral health impact profiles (OHIP).¹⁷ However, none of these measures have been tested to determine whether care has any impact on the measure.

It is also clear that not every assessment of expected benefit needs to be stated in terms of functional measures alone. An evaluation of two preventive regimens aimed at the same disease (e.g. two topical fluoride formulations) is legitimately based on a clinical outcome (e.g., caries reduction). Even so, strong patient and provider preferences for time, ease of use and taste might influence the final choice.

Estimation Of Expected Harm

Along with benefits, each intervention has a certain potential for harm. For example, in a study done in the East York, Ontario, Osuji et al¹⁸ showed that the use of fluoride dentifrices by children under two years of age was strongly associated with dental fluorosis in this community, and that this prac-

Table 1

Estimated Disability and Costs Associated With Alternative Strategies For the Removal Of Third Molars²¹

Strategy	National Estimates			
	Per Person (at risk)		Total (Millions)	
	Costs (1985)	Disability Days	Costs (1985)	Disability Days
Extract all early	247	2.27	278	3.00
Extract only if impacted	66	0.67	—	—
Extract if impacted with pathology	46	0.33	51.5	0.78

tice was responsible for 72 per cent of the fluorosis in this age group.

Calculation Of Expected Net Benefit-Harm

The ideal measure of expected benefit is net value (i.e., benefit minus harm), which is measured in terms of a common yardstick such as quality adjusted life-years. When appropriate, an allowance is made for the different time profiles of the anticipated outcomes (e.g., an immediate benefit is worth more than the same benefit occurring at some time in the future).

Calculation Of Expected Costs

The dollar costs of services or programs are often readily available. However, in comparing the costs for two or more health technologies, all relevant costs must be considered, including lost productivity while the patient is obtaining care, and the lost opportunity to use the required resources in other ways.

Opportunity costs are often significant. For example, treating four deciduous anterior teeth in one child cost the Children in Need of Treatment (CINOT) program of the East York Health Unit over \$700. The average treatment cost per child is under \$300. By authorizing such extensive care for one child under this program, which has a fixed budget, the opportunity to provide care for at least two other "average-needs" children was lost. Individuals who pay for some or all of their dental care out of pocket also face opportunity

cost issues, since the dollars and time they spend on dental care cannot be used for other activities.

Calculation Of Anticipated Cost-Effectiveness

In medical care, the calculation of cost-effectiveness results in an estimate of cost per quality-adjusted life-years gained, or the rate of return of a treatment in terms of expected outcome produced per unit of additional health care resources.

Process Of Technology Assessment

Technology assessment, as stated earlier in this paper, is a scientific process that involves many disciplines. To date, technology assessment has not evolved in dentistry to the point where it is based on a single, strict protocol. Commonly, the process involves the following steps:

- Definition of the problem;
- A literature review (perhaps meta-analysis) comparing the new and the old technologies in terms of expected benefits, harm and costs;
- Submission of the problem definition and technology assessment to a panel of experts for study, debate and the formulation of recommendations; and
- Issuance of a consensus statement or proposed guidelines.

Once these steps are complete, it remains for practitioners to adopt the changes proposed and for health care organizations and

Table II

Policy Choices After Evaluation Of a Technology

Costs	Effect of Technology	
	Worse	Better
More	Easy (No go)	Tough
Less	Tough	Easy (Go)

provider groups to incorporate such recommendations in their quality assurance processes.

In dentistry, we are becoming increasingly familiar with parts of the process. For example, we have seen three consensus conferences on the use of fluorides in the period around 1991.^{3,19,20} However, we have not really used this systematic approach to look at very many other technologies and, in Canada, we are just beginning to address quality assurance processes for the profession at large.

One Dental Example

Several dental technologies were examined in a 1990 issue of *International Journal of Technology Assessment in Health Care*. One paper by Tulloch et al,²¹ published in this issue, serves to illustrate the technical assessment part of the process. For the problem described, there are no RCTs to provide an estimate of the relative benefits and harms. Instead, Tulloch et al employed decision analysis techniques to compare the technology of extracting third molars from asymptomatic individuals, versus extracting them when impacted with no pathology, versus extracting them when impacted with pathology. For these three options they:

- Obtained the prevalence of impactions and associated pathologies (including cysts and tumors) from the literature;
- Obtained the fees charged for such extractions from practitioners;
- Collected, from a group of 46 clinicians, estimates of the probability and number of disability days (called DSDs or "days of standard discomfort" in the article) for all possible complications associated with each option for third molar extractions,

as well as the costs of treatment for each option;

- Assigned additional days of discomfort to pathologies occurring prior to surgery and for the occurrence of invasive neoplasms after treatment — factors that would be mainly relevant to the last two options;
- Obtained detailed hospital costs of items, including drugs and days of stay, for complicated bony extractions;
- Assembled costs of treating all possible outcomes on the basis of the probability of their occurrence; and
- Totalled all possible costs and disabilities for each option, based on the relevant assumptions about impaction state, pathology and likely complications.

Their findings are summarized in **Table I**.

Tulloch et al conclude that, in the United States, the technology of early extraction of all third molars was estimated to cost an additional \$226 million and 2.25 million disability days, respectively, compared to the strategy of waiting to treat until symptoms emerge. The advantage of the third strategy held up under repeated analyses conducted while changing the central assumptions of prevalence or the severity of consequences.

In this model of technology assessment, the investigators employed adjustment factors in an effort to ensure that the outcomes (benefits) of all three technologies were equivalent. This was done through the addition of disability days for pathology prior to and after surgery, and additional disability days to account for a lifetime of anxiety over an invasive neoplasm. When these adjustments

are included, Tulloch et al's study reduces to an estimate of the relative harm, expressed as disability days, and costs associated with each technology. The study takes a societal perspective, showing that, overall, the third strategy is best.

If the third strategy were adopted, it is clear that some individuals would suffer high disability and high costs. Nonetheless, the study provides clinicians with an explicit summary of the relevant information to share with patients to enable them to make an informed decision for their own treatment, and should be read in detail by those providing surgical services.

Implications

In simple terms, a comparison of two technologies should show which one is better (more benefit, less harm) and which one costs more. If we array the findings of such technology assessments on a contingency table, as shown in **Table II**, we see that the choice of technology for asymptomatic third molar extraction is relatively easy, based on this study, since one option would cost more than the other and would have more disability associated with it. Similarly, better technologies that cost less could easily be incorporated with the savings obtained by dropping ineffective or inefficient technologies.

The tough choices for society and individuals come on the other diagonal, especially where a new technology produces better outcomes but at higher costs. In this case, we need to determine whether the additional benefits are greater than the opportunity costs (i.e., where would the additional resources come from, and what benefits would be lost by drawing on these resources?)

In our view, we must make these kinds of assessments before we decide to incorporate new technologies into the training of dentists, and before we can ask our clients to pay for them. Through such assessments, we will be able to make more informed decisions about curricula and patient care. ■



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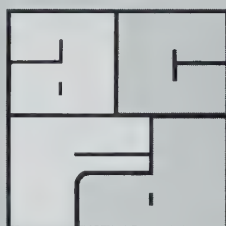
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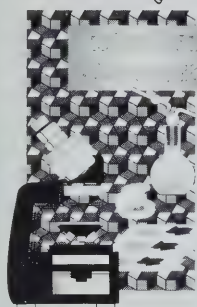
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SCIENTIFIQUE



La dysplasie cléidocrânienne : mise à jour et présentation d'un cas

Thanh De Nguyen, DMD

Jean-Yves Turcotte, DDS, MRCD(C)

Ste-Foy, Qué.

SOMMAIRE

La dysplasie cléidocrânienne, même si elle est peu fréquente, est toujours d'intérêt en médecine dentaire. Dans cet article nous faisons une revue de la littérature et présentons un cas clinique. Pour tracer un portrait général, il convient de mentionner une hypoplasie ou agénésie des clavicules, un retard d'ossification des fontanelles crâniennes, une rétention des dents primaires, de multiples impactions et de nombreuses dents surnuméraires.

Mots clés : Dysplasie cléidocrânienne, dysostose cléidocrânienne, maladie de Marie et Sinton, dysostose mutationnelle, syndrome de Scheuthauer-Marie-Sainton, absence des clavicules, rétention des dents primaires, retard d'éruption des dents permanentes, impactions multiples.

ABSTRACT

Cleidocranial Dysplasia, although not frequent, can present to the dentist. In this article, we have reviewed the literature concerning this disease and we present a patient with this condition. An overview of the disease would reveal partial to complete absence of clavicles, delayed closing of cranial fontanels, prolonged retention of deciduous teeth, subsequent delay

in eruption of permanent teeth and multiple impactions.

Key words: *Cleidocranial Dysplasia, Cleidocranial Dysostosis, Marie et Sinton Disease, Mutational Dysostosis, Scheuthauer-Marie-Sainton Syndrome, absence of clavicles, retention of primary teeth, delayed eruption of permanent teeth, multiple impactions.*

Introduction

La dysplasie cléidocrânienne, reconnue sous le nom de dysostose cléidocrânienne avant la conférence sur la nomenclature des désordres constitutionnels des os, tenue à Paris en 1969, peut se retrouver sous différentes terminologies synonymes, à savoir la maladie de Marie et Sinton (1898), le syndrome de Scheuthauer-Marie-Sainton, et la dysostose mutationnelle. Nombreuses sont les manifestations associées à cette maladie, certaines caractérisées de typiques alors que d'autres se retrouvent à une fréquence moins élevée chez les individus atteints. Ainsi, il devient difficile de dresser un tableau de ces manifestations multiples en spécifiant leur fréquence respective et précise d'apparition et encore plus embêtant de confirmer avec certitude qu'il s'agit d'une interrelation véritable avec ladite maladie ou tout simplement d'une coïncidence.

Cet article est une revue détaillée de la littérature et une présentation de cas. Seront traités les grands points suivants : l'étiologie de la maladie, les manifestations cliniques et les traitements envisageables dans une optique axée vers la chirurgie buccale et maxillo-faciale.

Étiologie

La dysplasie cléidocrânienne est une maladie d'étiologie inconnue qui dénote souvent, mais non exclusivement, un caractère héréditaire. Lorsque transmise de façon héréditaire, cette maladie revêt un caractère dominant et, dans les cas où elle semble être apparue de façon sporadique, elle s'avère être transmise de façon récessive et plus précisément soit sous forme de pénétrance incomplète du caractère génétique ou soit sous forme de mutation génétique propre.

La localisation précise du gène responsable n'a pas encore été élucidée de façon rigoureuse et scientifique. Par contre, il a été suggéré par Brueton et al (1992) que l'anomalie chromosomique responsable de ce phénotype se situe au niveau de la bande 22 du chromosome 8q (le long bras du chromosome 8). C'est en démontrant l'évidence de réarrangements du chromosome 8q 22 chez trois patients présentant des manifestations typiques de dysplasie cléido-

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crânienne qu'on a pu suggérer cette relation cause à effet. Chez les patients 1 et 2, des études cytogénétiques sur des lymphocytes du sang périphérique ont démontré une translocation balancée des chromosomes 8q 22.1 et 10p 12.3; i.e. 46, xx, t (8;10) (q22.1; p12.3). Chez le patient 3, une duplication de la bande q 31.3 - q 22.1 du chromosome 8 a été identifiée, i.e. 46, xx, dir dup (8) (q 22.1). Dans ces trois cas, la bande 22.1 du chromosome 8 est impliquée.

Présentation Clinique

1) Manifestations générales

Dans les manifestations générales de cette maladie, il n'existe pas de prédilection pour le sexe ni la race. De plus, l'intelligence et l'espérance de vie ne sont pas affectées de façon commune. Cependant, Pattisapu (1986) rapporte que l'épilepsie et le retard mental sont fréquemment notés dans la dysplasie cléidocrânienne.

Présentation clinique

De façon générale, cette maladie se caractérise par une atteinte du crâne, des clavicules, des dents, des maxillaires et des os longs. Au niveau du crâne, les fontanelles demeurent ouvertes, ou du moins montrent un retard dans la fermeture et, de ce fait, tendent à apparaître plutôt larges. De même, les sutures restent ouvertes et, de façon plus caractéristique, celle de la métope (frontale). La présence de nombreux os wormiens peut être mise en évidence à la radiographie. La suture sagittale est, de façon caractéristique, plus creuse, laissant ainsi au crâne une apparence plate. Les os frontaux, pariétaux et occipitaux sont proéminents et les sinus paranasaux restent sous-développés et étroits. La tête est de forme brachycéphalique, large et courte, avec un diamètre transverse du crâne augmenté. Les autres manifestations faciales incluent une exophtalmie légère, un hypertélorisme oculaire et une base nasale large dont la crête demeure aplatie.

Au niveau de la ceinture scapulaire, les anomalies varient de l'absence complète des clavicules (10% des cas) à un simple amin-

cissement d'une ou des deux clavicules. Pour cette raison, le patient présente une hypermobilité des épaules et peut être capable de les rapprocher, dans certains cas, jusqu'à ce qu'elles se touchent vis-à-vis de la ligne médiane.

Les os du pubis peuvent être affectés d'une hypoplasie et d'une ossification déficiente résultant en une symphyse pubienne large. Le bassin est souvent étroit et les ailes iliaques hypoplasiques. De plus, les dislocations de la hanche ne sont pas rares. Les anomalies des doigts, le cas échéant, consistent en des phalanges centrales des 2^e et 5^e doigts et des phalanges distales courtes et effilées, de polydactylisme, de syndactylisme et de clinodactylisme.

Les anomalies d'ossification de la colonne s'expriment par le spina bifida occulta, occasionnant parfois des tumeurs comme le schwannome qui, par compression, entraînent des paraparésies (paraplégie partielle des membres inférieurs). De plus, la colonne vertébrale se retrouve souvent affectée de cyphose, de lordose, de scoliose ou de fusion vertébrale tandis que le genu valgum et la coxa vara du fémur représentent les conditions pathologiques des os longs.

La surdité ou des problèmes de l'ouïe sont fréquents et secondaires à la réduction des canaux auditifs, à un défaut de pneumatisation des mastoïdes et aux malformations des osselets.

La dysplasie cléidocrânienne, jadis considérée comme n'impliquant que l'os membraneux est maintenant reconnue comme un syndrome affectant tout le squelette.

2) Manifestations buccales

Un palais arqué, haut et étroit caractérise le plafond de la cavité buccale dans la dysplasie cléidocrânienne. De plus, une fente palatine sous-muqueuse ou même vraie n'est pas rare. De façon presque constante, on retrouve une macrognathie inférieure, plus souvent vraie que relative. Le sous-développement des os lacrimaux et zygomatiques a aussi été décrit.

Une des manifestations saillantes demeure la rétention prolongée des dents primaires et un retard d'éruption ou même une rétention permanente des dents d'adulte.

Par ailleurs, il est caractéristique de retrouver à la radiographie une multitude de dents surnuméraires qui ne font pas éruption. On les retrouve plus fréquemment dans la région prémolaire et incisive inférieures.

D'après une étude récente de Jensen et al (1990) sur le développement de la dentition dans la dysplasie cléidocrânienne, la formation de la dentition primaire est normale tandis que les dents permanentes présentent, chez 18 des 19 patients étudiés, de nombreuses surnuméraires. Lorsque les dents surnuméraires se forment au niveau des molaires, elles se développent généralement distalement à la 3^e molaire. Conséquemment, l'extraction de ces 4^e et même 5^e molaires constitue une chirurgie difficile.

Des cas de dentition complète surnuméraire antérieure aux molaires ont même été rapportés et sont qualifiés de "deuxième dentition permanente". Ces dents surnuméraires se sont ajoutées lingualemment et occlusalement aux dents normales. La maturation des dents primaires est normale, par opposition à celle des dents permanentes qui est retardée de 1 à 4 ans. L'éruption des dents primaires est encore une fois normale, tandis qu'au niveau des dents permanentes, l'éruption est presque invariablement problématique. L'arrêt ou le retard d'éruption est attribué à :

- 1 la résorption diminuée de l'os et des dents primaires,
- 2 la présence de dents surnuméraires multiples obstruant le chemin d'éruption des permanentes sus-jacentes,
- 3 au manque de ciment cellulaire sur les dents permanentes,
- 4 au manque d'union entre le follicule dentaire et la muqueuse dû à une interposition de tissus fibreux agissant ainsi comme une barrière à l'éruption.

L'examen histologique de l'os sus-jacent aux dents permanentes révèle un tableau de trabécula-

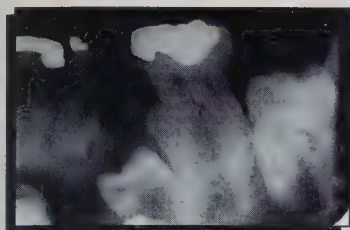


Fig. 1 : Cliché périapical de la région prémolaire inférieure gauche montrant la présence d'une lésion radiotranslucide - Février 1992.

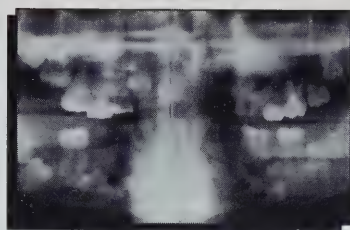


Fig. 2 : Panoramme pris à la même date.

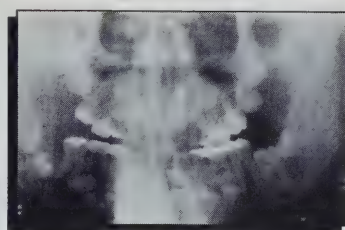


Fig. 3 : Panoramme datant de 1987 démontrant plusieurs surnuméraires et incluses ainsi que des traitements dentaires déjà présents sur quelques dents.

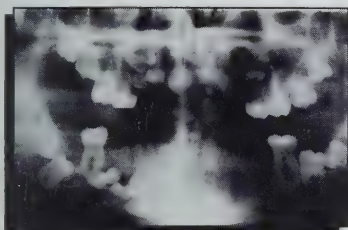


Fig. 4 : Radiographie panoramique prise deux mois en post-opératoire démontrant le site chirurgical en voie de guérison et les dents laissées en place.

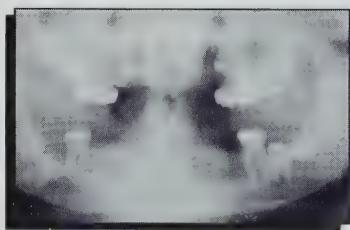


Fig. 5 : Panoramme illustrant l'état dentaire radiographique actuel.

tions anormalement denses traversées de multiples lignes, indiquant une résorption incomplète.

La localisation ectopique des dents permanentes, dans le cas où elles feraient éruption, est causée par la migration secondaire à l'arrêt d'éruption et les interférences avec les dents surnuméraires dans la région.

Traitement et Pronostique

Il n'existe pas de traitement spécifique pour cette condition étant donné que chaque cas particulier trouve son plan de traitement qui lui est propre. La nature du plan de traitement dépend en grande partie du moment précis du diagnostic de la maladie et de l'initiation de l'intervention. De plus, une approche multidisciplinaire est de mise lors de la planification du traitement de ces patients, regroupant la chirurgie buccale et/ou orthognatique, la pédodontie et l'orthodontie. Les modalités de traitement qui existent se résument premièrement en l'intervention en jeune âge décrite par Jensen et al (1990), deuxièmement en des stratégies de traitement dans les cas de diagnostics plus tardifs et, enfin, en une conduite à suivre dans les cas d'âge avancé.

1) Intervention en jeune âge

Région antérieure aux molaires

Ce principe de traitement consiste en un diagnostic et une intervention précoces dans le jeune âge du patient. Étant donné que les surnuméraires initient leur minéralisation environ quatre ans plus tard que les dents permanentes normales correspondantes, il est possible de diagnostiquer leur présence radiographiquement dès l'âge de 5 à 7 ans environ pour les incisives et quelques années plus tard pour les canines et prémolaires.

Lorsque la racine de la dent permanente normale a atteint environ le tiers de sa longueur finale estimée, la dent surnuméraire qui se forme incisivement et lingualemment par rapport à la dent normale devrait être extraite, de même que l'os sus-jacent et la dent primaire. Dans les régions exemptes de surnuméraires, l'éruption des dents permanentes est aussi grandement facilitée par l'extraction des dents primaires au stade où la moitié de la formation de la racine de la dent permanente a pris place. Au même moment, l'ex-

position chirurgicale de la dent permanente sous-jacente par exérèse osseuse est indiquée.

Région molaire

Les molaires surnuméraires se forment distalement à l'arche dentaire présente. Les premières molaires font éruption le plus souvent sans problème, de façon instantanée, présument à cause de la mince couche d'os qui les recouvre. Les deuxième molaires peuvent également faire éruption spontanément, mais ceci de façon moins fréquente et plus retardée. Les troisièmes molaires ainsi que les molaires surnuméraires sont presque toujours incluses, et peuvent être laissées en place si aucun problème n'a pu être détecté aux niveaux clinique et radiographique et doivent être contrôlées périodiquement (annuellement) pour la recherche de pathologies (formations kystiques). Advenant le cas, l'extraction chirurgicale s'impose.

Des traitements orthodontiques subséquents semblent être nécessaires dans la plupart des cas décrits dans la littérature mais il est accepté, de façon consensuelle, que l'extraction au moment approprié des dents primaires et surnuméraires faciliterait considérablement la possibilité d'éruption spontanée.

2) Intervention plus tardive

Une intervention plus tardive consiste essentiellement en une combinaison de traitements chirurgicaux, orthodontiques et orthognatiques. Le plan de traitement devra être séquentiel et amorcé le plus tôt possible. Toute



Fig. 6 : Vue frontale du patient. Noter l'hypertélorisme oculaire, la forme typique du nez large, dont la crête est aplatie, et la petitesse de la périphérie faciale (excluant la mandibule).



Fig. 7 : Vue latérale du patient mettant en évidence la prognathie mandibulaire squelettique et la forme caractéristique du nez.

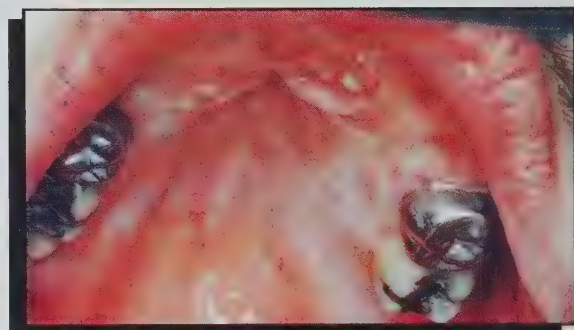


Fig. 8 : Vue intra-orale du maxillaire supérieur. Noter la forme profonde du palais et l'éruption des dents du sextant qui débute.

attente d'une éruption spontanée retardant l'intervention devra être proscrite.

Les phases communes de traitement retrouvées dans la littérature comprennent :

- 1 L'extraction des dents primaires et surnuméraires,
- 2 L'exposition chirurgicale de dents permanentes,
- 3 L'alignement orthodontique du plan occlusal et traction orthodontique lorsque nécessaire,
- 4 La chirurgie orthognatique qui est presque toujours indiquée idéalement, et dont la nécessité dépendra de l'obtention d'une occlusion dentaire acceptable.

Sur ce, il est pertinent d'ajouter que la nécessité de la chirurgie orthognatique augmente avec le délai attendu avant l'initiation du traitement et ceci, à cause de la difficulté croissante d'obtenir une occlusion dentaire adéquate. Rétrospectivement, une procédure à double arche serait avantageuse en ce sens que les forces orthodontiques verticales extrusives pourraient être produites par la

traction réciproque entres les arches, utilisant des élastiques verticaux comme le proposent Davies et al (1987).

3) Intervention en âge avancé

Chez les patients plus vieux, le traitement concerne l'obtention ou la maintenance d'une crête alvéolaire adéquate pour la confection de prothèses. Les greffes autogènes osseuses de crêtes iliaques ou de côtes ont fait leurs preuves depuis déjà assez longtemps. Cependant, la morbidité associée au site donneur dans la procédure chirurgicale existe toujours.

Pour les patients atteints de dysplasie cléidocrânienne, l'extraction des molaires résiduelles (troisièmes molaires et/ou surnuméraires) associées à des lésions kystiques implique davantage la maintenance ou l'obtention d'une base osseuse adéquate pour la réhabilitation prosthodontique dans les cas d'édentation complète. Pour ces patients, une augmentation peut être effectuée avec différents matériaux synthétiques de greffe osseuse.

Les matériaux synthétiques utilisés dans la réparation et l'augmentation osseuse comprennent l'hydroxyapatite, le phosphate tricalcique et les combinaisons d'hydroxyapatite de collagène. Tous sont biocompatibles et contiennent principalement du calcium et du phosphate. La différence dans la formule, cependant, influencera, selon Quinn (1992), les propriétés de ces matériaux. L'hydroxyapatite $[Ca_{10} (PO_4)_6 (OH)_2]$ est non résorbable, tandis que le phosphate tricalcique $[B-Ca_3 (PO_4)_2]$ est graduellement remplacé par de l'os lorsqu'il est apposé intimement à l'os sanguinolant. En plus de combler convenablement les défauts osseux laissés par les kystes, ces matériaux procurent du support pour les tissus mous sus-jacents au site chirurgical et permettent une forme adéquate sur laquelle une prothèse peut être confectionnée.

Présentation de cas

Il s'agit d'un patient présentement âgé de 27 ans qui s'est présenté en urgence, en février 1992,

au bureau de son dentiste en se plaignant de douleur et d'enflure à la région mandibulaire gauche. À l'examen du cliché périapical de cette région précise (mésiale à la première molaire inférieure permanente gauche) **Fig. 1**, on peut remarquer une lésion radiotranslucide adjacente à des dents qui sembleraient être des prémolaires encore incluses. Le dentiste traitant s'empresse de prendre une radiographie panoramique reproduite à la **Fig. 2**. L'examen du panoramique révèle plus de trente dents incluses dont environ sept surnuméraires et la rétention des dents primaires.

De plus, une radiographie panoramique (**Fig. 3**) datant de 1987, alors que le patient avait 20 ans, montrait de façon claire la rétention de presque toutes les dents primaires, de multiples dents incluses et surnuméraires et impliquait un diagnostic possible de dysplasie cléidocrânienne. Il a été décidé de diriger le patient vers le Service de chirurgie buccale et maxillo-faciale de l'Hôpital de l'Enfant-Jésus pour l'ablation de la lésion dans la région prémolaire inférieure gauche, le diagnostic provisoire étant celui d'un kyste folliculaire infecté.

Au mois de juin de la même année, le chirurgien traitant du centre hospitalier a procédé, sous anesthésie générale, à l'ablation du kyste et des dents affectées de la région, ainsi que des dents primaires jugées inadéquates. Le cliché panoramique pris deux mois après l'opération (**Fig. 4**) montrait le site chirurgical en voie de guérison et les deux seules dents primaires laissées en place (#55 et 65). On peut observer sur la radiographie datant du 29 janvier 1994 (**Fig. 5**), l'état actuel des dents, des maxillaires et structures avoisinantes du patient. Ceci résume l'histoire dentaire du patient.

Au point de vue étiologique, au dire du patient, il ne semblerait qu'aucun membre de sa famille, frère, sœur ou parent, ne serait affecté de cette maladie. De façon subjective, on peut alors suggérer qu'il s'agit d'une apparition sporadique. Sur le plan général, l'histoire médicale et la revue des sys-

tèmes sont essentiellement négatives; le patient ne manifeste aucun retard mental ni handicap physique, susceptibles de limiter ses activités.

Aux niveaux maxillo-facial et crânien, nous constatons, en observant le plan frontal, des traits caractéristiques de la dysplasie cléidocrânienne (**Fig. 6**).

- 1 l'hypertélorisme oculaire,
- 2 la base du nez relativement large et dont la crête est aplatie,
- 3 la petitesse relative de la périphérie faciale, en raison des os maxillaires, lacrymaux et zygomatiques hypoplasiques.

Le profil du patient (**Fig. 7**) permet de mettre en évidence la prognathie mandibulaire squelettique et de nouveau la crête du nez relativement aplatie. L'observation intra-orale du maxillaire supérieur (**Fig. 8**) révèle un palais haut et arqué (sans fente palatine) et les dents du sextant antérieur qui débute leur éruption. Suite à l'examen extra-oral et à l'histoire du patient, nous avons noté, d'une part, la brachycéphalie en raison des bosses pariétales et occipitales proéminentes (plutôt que les bosses frontales, tel que rapporté dans la littérature comme étant les plus fréquentes) et, d'autre part, l'absence d'exophtalmie et de surdité de conduction. Les données disponibles (radiographies, photos) étant insuffisantes ne nous permettaient pas d'apprécier l'état des sinus paranasaux, des sutures crâniennes, de la pneumatisation des mastoïdes, ainsi que la présence d'os wormiens.

L'examen de la ceinture scapulaire démontrait une ébauche des clavicules et une hypermobilité des épaules.

L'observation des doigts montrait la présence de phalanges relativement courtes. Aucune anomalie des types polydactylisme, syndactylisme ou clinodactylisme n'a été remarquée.

Le patient nous a rapporté une opération pratiquée à la colonne vertébrale il y a environ dix ans pour la correction d'une scoliose de la région lombaire. L'insuffisance des données diagnostiques nous empêchant de confirmer avec exactitude la présence d'au-

tres anomalies, le patient ne nous a rapporté aucune anomalie au niveau du bassin et des os longs (genu valgum ou coxa vara du fémur).

L'examen intra-oral révèle la présence de prothèses partielles qui procurent au patient une fonction et une esthétique relativement acceptables.

En conclusion, à l'examen de la radiographie prise antérieurement à la confirmation du diagnostic de dysplasie cléidocrânienne (**Fig. 3**), on peut remarquer que des traitements dentaires avaient déjà été effectués (obturations sur plusieurs dents, couronnes en acier inoxydable sur des dents primaires, restauration endodontique sur la dent #26), sans qu'aucune démarche n'ait été entreprise auparavant pour traiter la condition dysplasique comme telle, ni même que le patient ne soit informé de sa condition. Ceci nous permet d'accentuer davantage l'importance d'un diagnostic et d'une intervention précoces en vue d'obtenir de meilleurs résultats et une facilité relativement plus grande lors des traitements subséquents.

Conclusion

Originalement, on croyait que la dysplasie cléidocrânienne n'impliquait que les anomalies associées aux os d'origine intramembraneuse, à savoir les os du crâne, les maxillaires, les os plats et les clavicules. Il est maintenant reconnu, comme déjà mentionné, que la formation endochondrale d'os, notamment celle des os longs et de presque tout le reste du squelette en est également affectée. La clavicule étant la première à entamer son ossification durant la 6^e semaine in utero, représente l'entité la plus souvent affectée.

La manifestation la plus pertinente dans le domaine de la médecine dentaire, comme déjà explicité, constitue la rétention de la dentition primaire et le développement retardé de la dentition permanente, résultant en de multiples impactions dentaires et surnuméraires.

En ce qui concerne les modes de traitement, en principe, c'est la synchronisation ou le moment précis du traitement qui constitue



le principal facteur responsable de l'obtention de mauvais résultats observés jusqu'à maintenant. Le moment précis d'intervention semble être d'importance capitale.

En guise de conclusion, la conduite à suivre pour le dentiste confronté à cette condition est primordialement d'adopter une perspective multidisciplinaire et considérer toutes les anomalies qui y sont associées comme un ensemble dans lequel les composantes sont interreliées. En second lieu, il verra soit à prodiguer des soins immédiats, soit à initier certains traitements, ou soit à diriger le patient vers les spécialités concernées, selon un jugement adéquat du cas. ■

NOTE : Ceci est une version abrégée du texte original. Pour obtenir la version complète s'adresser au D^r Jean-Yves Turcotte, Faculté de médecine dentaire, Université Laval, Ste-Foy, Québec, G1K 7P4.

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DID YOU KNOW?

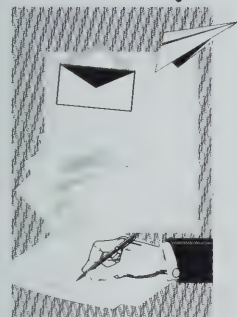
Imagination was given to man to compensate him for what he is not; a sense of humor, to console him for what he is.



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LETTERS



Impressed

I wish to compliment the *Journal* on the September editorial, What Would You Say? (Crawford, P.R. *J Can Dent Assoc* 60(9):759, 1994). It impressed me very much. It is so true and honest.

We seniors have been around a long time and have seen much water under the bridge. We worry about our profession and wonder where it is going. But as seems to happen to all children, most make it to where they intended to go.

G.C. Walkey, DDS (Alberta 1942)
Duncan, B.C.

No Women on CDA Board

When I received a copy of the *CDA Annual Review 1993-1994*, I noted that the photograph on the front cover shows quite clearly that gender equality has a long way to go in our profession. Not a single woman is represented on the CDA board of governors. Too bad.

Leendert Boksmen, DDS, B.Sc.
London, Ontario

A Relationship Between Smoking and the Failure Of Dental Implants

The successful integration of a dental implant can be predicted with reasonably good accuracy as a result of research into the factors associated with integration and the failure of integration. Research has identified systemic, anatomic, and metabolic factors as having a direct bearing on successful implantation. Cigarette smoking has been thought to be harmful but there has been no definitive research to date that either proves or disproves this. The authors compared the rate of implant failure in patients who smoke with the rate of failure in non-smoking patients.

The retrospective study evaluated the treatment records of 540 patients who had received a total of 2,194 osseointegrated implants. The patients in this study received Branemark implants over a six-year period. The authors defined the failure of an implant as either the loss or removal of the fixture or if radiographic examination revealed 50 per cent or greater vertical bone loss. Implant fix-

tures which did not integrate after surgical placement were also included in this study. The patient's medical history and whether the patient smoked or not were noted for statistical comparison.

Of 2,194 implant fixtures there were 153 failures which constitutes an overall failure rate of 6.97 per cent. A comparison between those patients who smoked with those who did not revealed that the implant failure rate in patients who smoked was 11.28 per cent and as opposed to 4.76 per cent in non-smokers. The difference between these two groups is statistically significant. The failure rate in patients who smoked was higher for shorter implant fixtures with less initial bone converge. An analysis of the site of failed implants in smokers and non-smokers showed that patients who smoked had a higher rate of implant fixture failure in all regions of the jaw with the exception of the posterior segment of the mandible.

It has long been known that cigarette smoking has a detri-

mental effect on healing after oral surgery and it is common to ask patients to refrain or decrease cigarette smoking after oral surgical procedures. The actual mechanism of the higher failure rate of implants in patients who smoke is not known.

It would appear from this study that patients who smoke are at higher risk for implant failure as compared to patients who do not smoke. Pre-operative evaluation for implant placement should take this into account and patients who smoke cigarettes should be advised of the higher risk prior to surgery. The placement of shorter implant fixtures in patients who smoke is particularly risky with a failure rate on the order of 25 per cent. The authors advise that smoking should be considered a risk factor when evaluating patients for implant surgery.

Bain, C.A. et al. *Int J Oral Max Impl*; 1993; 8: 609-615.

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CDA LIBRARY



Annual Library Special

Once again, the CDA Library will be offering CDA members a two-for-one special on library packages from the past year. Until January 30, 1995, CDA members can get any two of the following packages for \$5 (plus applicable taxes).

Each package contains about 25 articles gleaned from dental literature with the assistance of a MEDLINE computer search.

To take advantage of this special offer, call the CDA Library at: 1-800-267-6354 (ext. 223).

Package topics:

- Anesthesia for the Pediatric Patient
- Informed Consent
- Latex Hypersensitivity
- Mercury and Dental Amalgam
- Osteoporosis
- Pit and Fissure Sealants
- Quality Assurance
- Tobacco and Oral Health
- Tooth Erosion
- Tooth Replantation
- Tuberculosis
- Xylitol
- Diagnosis of Periodontal Diseases
- Treating Periodontal Diseases

LIBRARY PACKAGE FOR DECEMBER

During the month of December, the CDA Library is offering a package on Nutrition, Diet and Dental Health to members for \$5 each (plus applicable taxes). Some of the items available in this package are:

- Barker, T. "Realistic dietary advice for patients." *Dental Update*. 21(1); 1994, pp. 28-34.
- Pla, G.W. "Oral health and nutrition." [Review] *Primary Care*. 21(1); 1994, pp. 121-33.
- Makinen, K.K. "A dietary procedure for preventing dental caries in young adults." *Journ Amer Coll Health*. 41(4); 1993, pp. 172-80.
- Larsson, B. et al. "Prevalence of caries in adolescents in relation to diet." *Comm Dent Oral Epid*. 20(3); 1992, pp. 133-7.
- Holm, A.K. "Education and diet in the prevention of caries in the preschool child." *Journ of Dent*. 18(6); 1990, pp. 308-14.
- Black, A. "Nutrition advice and dental health objectives." *Journ of Irish Dent Assoc*. 39(4); 1993, pp. 103.

New in the CDA Library

The following recent additions to the library collection are available for loan to CDA members. The borrowing cost per item is \$5 (plus applicable taxes), which includes a return postage slip. Books and videos can be borrowed from the library for up to one month, and can be renewed provided there is no waiting list.

- Cochran, D.L. *Plaque and Dental Calculus Removal*. Quintessence, 1994.
- Crispin, B.J. *Contemporary Esthetic Dentistry*. Quintessence, 1994.
- FDI. Van Amerogen, B.M., and Bevan, G. editors. *Oral Economic Surveys: Basic Methods*. [revised] 1994.
- Fuller, S. and Brown, C. *Working Together to Promote Dental Health*. FDI & Northwestern Regional Health Authority. 1990s.
- Lang, N.P. and Karring, T. editors. *Proceedings of the First European Workshop on Periodontology*. Quintessence, 1994.

- Ozar, David T. and Soko, David L. *Dental Ethics at Chairside: Professional Principles and Practical Applications*. Mosby, 1994.
- Pinkham, J.R. et al. *Pediatric Dentistry: Infancy Through Adolescence*. Saunders, 1994.
- Sachs, L. *Do-it-yourself Marketing For The Professional Practice*. Prentice-Hall, 1986.
- Sutherland, R and Fulton, J. *Spending Smarter and Spending Less: Policies and Partnerships for Health Care for Canada*. The Health Group, 1994.
- Wilde, J.A. *Bringing Your Practice into Focus*. Penwell, 1994.
- Worthington, P., Lang, B. and LaVelle, W., editors. *Osseointegration in Dentistry: An Introduction*. Quintessence, 1994.
- World Health Organization. Technical Report #846. *Fluorides and Oral Health*. WHO, 1994.

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OTTAWA 1995

Canadian Dental Association Annual Meeting

August 26 - 29 • 26 - 29 Août

Réunion annuelle de l'Association dentaire canadienne

UPDATE

A Tough Act To Follow, But ...



What a great event the FDI 1994 World Dental Congress was this past October in Vancouver! I'm sure that many of you have as fond memories of your visit and activities as I have. FDI 1994 is a tough act to follow but the CDA '95 Organizing Committee and staff are committed to making the transition from 1994 to 1995 and producing a fabulous meeting for you that will be as equally successful and exciting.

It is both a pleasure and a privilege to have been appointed Chair of the next Canadian Dental Association Annual Meeting which will be held in Ottawa, my home town, from August 26 - 29.

A strong and experienced committee has been formed. In addition to myself, Drs. Ian McConnachie and David Rogers have gone through one CDA Convention in Ottawa 1990. The other doctors on the committee are: Dr. Nalin Bhargava, Dr. Joel Eisenstat and Dr. Lisa Gifford. Each of these individuals is also an active member of the Ottawa Dental Society.

In addition, Dr. Michel Jahjah is a part of the '95 Committee and will lead the CDA convention staff in the day-to-day aspects of the meeting. Having experienced FDI '94, they will use their expertise to bring you a fantastic meeting.

In November we had our first planning session. Each member is eager and excited about the Ottawa '95 meeting. August will be here in just eight short months but we're well on our way to putting together a terrific scientific program, enjoyable visits and tours, fun children's activities, elegant social evenings and a buzzing exhibit hall — all for you!

Continue to refer to these blue pages in the coming months and we'll do our best to keep you updated on the 1995 convention. Reserve the dates of August 26 - 29 in your 1995 calendars now. Best wishes for the holiday season!

Elizabeth MacSween, DDS,
Chair
CDA 1995 Annual Meeting
Canadian Dental Association
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The subject headings have been assigned in accordance with those established by the National Library of Medicine.
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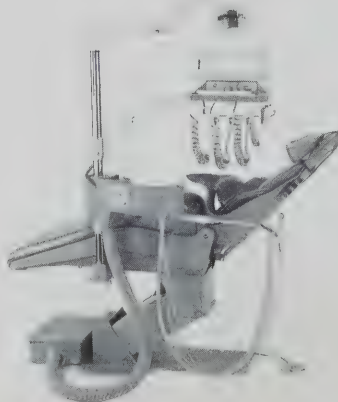
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GUEST EDITORIAL

A PERSPECTIVE ON HOMELESSNESS IN CANADA

Large numbers of homeless people roam the streets of Canadian cities. In recent years, we have all become accustomed to the sight of men and women — young and old — panhandling, sleeping on grates and wandering the streets. However, one aspect of homelessness that people don't always recognize in a country such as Canada — where we assume that everyone has access to universal health care — is the degree to which the health of homeless people is compromised. This occurs not only because of their lifestyle, but also because of the difficulties they encounter when accessing health services.

Homelessness can mean that an individual is permanently, periodically or temporarily without shelter, and includes people who are at risk of being on the streets in the near future. Being without shelter means that individuals and families lack personal control, privacy and security. Such circumstances, and the inherent instability they bring, reduce people's ability to gain employment and to access social, economic and cultural public services.

The causes of homelessness are many, and generally result from "the confluence of social, economic, political and physical factors which combine in particular ways and at varying spatial and temporal scales."¹ The primary factors include: unemployment; underemployment and poverty (an inability to pay for shelter); the lack of affordable housing;² family breakdowns; inadequate social services; mental illness and a lack of community support for the de-institutionalized; and, finally, displacement caused by urban revitalization.¹ In addition, homeless teenagers often wind up on the streets due to physical, sexual and psychological abuse in the home.

While it is difficult to get accurate figures on the numbers of homeless

people in Canada, estimates from the 1980s range from 130,000 to 250,000.³ However, these figures should be regarded as minimum estimates, since most analysts agree that current social and economic changes have led to an increase in homelessness in Canada.

The 1990s have brought new pressures to bear on individuals and families that have exacerbated the homelessness crisis in Canada. For example, basic structural changes in the economy — the combined effects of the recession and free trade agreements — have led to massive (and permanent) job losses in industrial sectors across Canada. The result has been an increase in unemployment, poverty and family instability. As well, strong public pressure on various levels of government to cut back on social spending has meant that many services for the poor have been reduced at a time when the demand for such services has been steadily rising.

The consequences of such social and economic changes include not only increased levels of homelessness, but also a worsening set of supports and services for those already living on the street. This is a particularly important consideration when examining the issue of accessible health care for those without shelter. In general, homeless people — whether "living rough," in hostels, in inadequate housing, or staying with friends — are exposed to a wide range of short- and long-term health risks. It is not that they have different illnesses than people who have adequate housing, but that poverty, and the instability of their lifestyle, make it much more difficult to deal with health issues.⁴

At the same time, the ability of homeless people to access the health care system is poor. Structural impediments within the health care system mean that service providers are often unwilling and/or unable to meet the needs of special population groups such as the homeless. Because of a perceived bias in service delivery, many homeless people avoid seeking medical help until their condition is serious. In addition, the be-

havioral and lifestyle skills that become appropriate adaptive strategies for dealing with the risks associated with street life can, in fact, be counterproductive in a doctor's office or hospital setting. As a result, the quality of care received by street people is often inadequate.

In summary, it is clear that, in terms of health care, there is a high level of unmet need among the homeless population in Canada. By definition, this level of need also extends to, and includes, the oral health of those living on the street.

At Shout Clinic, where we provide health services for street youth, we are constantly made aware of the consequences of poor oral health. Bleeding and diseased gums, decayed teeth and impacted wisdom teeth are routine conditions for street youth, leaving many in constant pain and certainly affecting their ability to improve their circumstances. Unfortunately, there are very few places they can go to get their oral health needs met.⁵

Improving access to oral health services for the homeless can be seen as part of a broader agenda to, first, improve the overall health of this marginalized population and, second, empower them to increase control over their lives. Finding new and creative solutions to this problem will require the support of both dentists and medical doctors, as well as a concerted effort on the part of government and social agencies. ■

Stephen Gaetz, PhD, is health promotion coordinator at the Shout Clinic in Toronto, Ontario.

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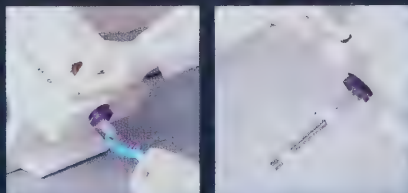
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CDA

ANNUAL REVIEW 1993-1994



CANADIAN DENTAL ASSOCIATION



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COVER PHOTO: Members of the 1993-94 CDA Board of Governors.
See page 35.



Dr. Raymond Wenn
CDA President.

PRESIDENT'S MESSAGE

***I**t seems like only a blink of an eye in time has elapsed since I became the 75th president of the Canadian Dental Association on September 10, 1993. The days pass by so quickly when you're occupied with a labor of love.*

Looking back on the year, my thoughts are drawn to an introductory interview that CDA *Journal* editor Dr. Ralph Crawford wrote for the September 1993 issue. The purpose of the piece was to familiarize the Canadian dental community with Dr. Ray Wenn of Charlottetown, Prince Edward Island.

Ralph titled the interview "Meet the Wenns from PEI — A True Dental Family." He explained that my eldest daughter, Dr. Cheryl Wenn, was a partner in my practice; that my second daughter, Kimberly, was in third year dentistry at Dalhousie University; and that my wife, Dianne, was the office manager for our practice. My son, Stephen, the young-

est member of the family, was leaning toward a career in teaching at that time. Every family has its exceptions to the rule.

Not much has changed since then, really. Cheryl is still my partner — and put in many, many extra hours in the practice this past year while I travelled across the country for CDA. Kimberly is in fourth year, looking forward to graduation. Dianne somehow managed to keep everything on an even keel back home, despite the extra demands my activities placed on her time. And Stephen is still bent on becoming a teacher. I owe so much to all of them for the support and love they've given me over the last 13 months.

A year ago, when Ralph first broached me about doing an interview, I felt really comfortable about the concept of having my family serve as the peg on which the whole introduction piece would hang. Today this same feeling of comfort prompts me to use a similar family peg to support my memories of a wonderful year as CDA's president.

We often make reference to the "Canadian dental family," perhaps because it is a more human way of describing the collective members of the nation's oral health profession. I think that the "family" image also helps us to keep our focus on the responsibilities and privileges that come with our role in society. And at a time

when we're hearing a lot of fuzzy words about "family values" in the news media, I want to be clear about the key elements that make up a dental family value system, as I see them. At a minimum, the Canadian dental family must possess:

- Dedication to its expressed principles and goals;
- Freedom to control its own professional destiny;
- Confidence that its strength lies in its unity;
- Understanding of its place in the larger world community.

So, based on these values, how did our CDA dental family perform in 1993-94?

On the first element of dedication to principles and goals, we continued to review and improve our planning capacities. The CDA mission statement and goals, which are highlighted in the Governance section of this *Annual Review*, speak for themselves. Our planning process is serving us well in "putting the money where the mission is" — but more about money in a moment.

Our planning process also places a stern discipline on CDA's political leaders who have to defend actions and expenditures in open forum. This *Annual Review* is an accountability report to our shareholders, the members of CDA, both individual and corporate. I'm pleased to report that we're on course and that

the past year has been one of continued positive development.

The second element — freedom to control family destiny — is meaningless in the absence of planning capacity and dedication to principles and goals. For freedom can be a whimsical concept at best if there is no dollar wherewithal to finance the pursuit of a perceived or desired destiny. And freedom can be eroded if you don't take pains to protect your interests and your economic borders.

Take CDAnet, for example. In 1993-94 CDAnet overcame the pain and wrenching financial commitment of its birth, a story that need not be reviewed again here, to emerge as a hallmark of all the best aspects of our value system's "freedom and destiny" element.

CDAnet was conceived — at one and the same time — as a member service, a source of non-dues association revenue, and a dentist-owned billing and payment technology. Yes, there were some growing pains. But CDAnet was and is a planned investment in professional freedom and destiny control that has only just begun to show its stuff. The additional work in 1993-94 to launch the CDAnet *Plus* service components will bring these on stream at just the right time. We're up and running on the so-called information highway. It's not pleasant to think about the alternatives, or what the prospects would be to implement a comparable system today if we had not acted when we did.

As CDAnet moved toward positive cash flow this year, and as other measures covered in this *Review* took hold, we were able to meet our budget targets for 1993-94, including our objectives for mortgage and debt reduction. This was a very satisfying outcome for me personally. When I began my year as CDA's president, I felt a strong sense of commitment and purpose. As team leader, I wanted to see our management committee maintain and, if possible, improve CDA's financial health, even if that required us to administer some strong budgetary medicine. I am pleased to report that this year the patient leaves our operatory in good shape.

The cloud that has hung over CDA's financial future since we turned to the courts to resolve a disagreement with the Quebec Dental Surgeons' Association over the permissible uses of the surplus funds generated by our insurance plans is no more. It was dissipated this year when the Court of Appeal for Ontario found largely in CDA's favor. With the decision, CDA and QDSA quickly came to a comprehensive settlement to resolve the surplus funds issue once and for all. Still, it was very stressful to have a dispute of this magnitude happening within our dental family, and we must all now work at coming together to turn the page.

Although CDA finances are generally in the black, no president can leave the post feeling good about an overall membership picture that in-

cludes only two-thirds of the dentists of Canada. Over 5,000 dentists in Quebec and Ontario remain outside our CDA dental family. We simply must do better, or we put at risk our mission to be "the authoritative national voice, resource and focus of unity for the profession of dentistry in Canada . . ."

This leads us to consider the next family value element — confidence that our strength lies in our unity. In 1993-94 we were able to demonstrate this value-laden truth by leading a successful protest against the federal government's plans to tax employer-paid dental plan premiums and roll back RRSP contribution limits. We won this particular battle, but the war has just begun. These damaging initiatives will likely be brought forward again in the 1995 budget, and they may be accompanied by a proposal to broaden the base of the Goods and Services Tax (GST) — effectively eliminating most sales tax exemptions.

If outgoing presidents were able to grant one wish to a successor, one "singing sword" to brandish against the perils on the immediate agenda, this president would bestow the sword of membership unity. However, despite the need for all the help we can get on this score, it's fair to say that CDA has been doing a creditable job on organizational unity as well as on tax-issue unity. We're trying very hard to be better listeners, and to use what you tell us to bring forward options for improvement.

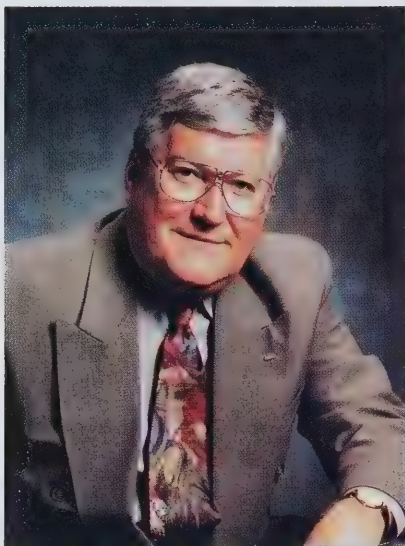
But on to understanding our place in the larger world community — the fourth and last element in our dental family's value system. The Wenns cherished their chance to join with the global dental family attending the FDI World Dental Congress in Vancouver this October. Rarely does anyone get that kind of grand finale event to a term in office. It seems somehow particularly Canadian in nature that the president of the host organization to this world gathering was and is a very proud and appreciative general practitioner from P.E.I., Canada's smallest province and the home to fewer than 50 of its 16,000 dentists.

So the year ends, and so does this brief review. It only remains to thank all the close inner family of management, executive and board members, CDA staff and uncounted volunteers who helped me live the year of a lifetime.

This year-long opportunity to move around Canada and meet with members of provincial associations and local society groups gave me the special working joy that only a CDA president knows. I thank you all for that opportunity. The Wenn family en masse thanks you.



Raymond Wenn, DDS
*President of the Canadian
Dental Association, 1993-94*



Mr. Jardine Neilson
CDA Executive Director.

EXECUTIVE DIRECTOR'S MESSAGE

No matter where you are these days, whether it's at the office, at home or at a social function, the conversation almost invariably revolves around a set list of recurring themes: taxes, the deficit, the national debt, Canada's education system, crime and the battered Canadian dollar, with taxes being the topic of choice nine times out of 10.

I've overheard these conversations in countless airports and I've participated in them with family, friends and associates — most of whom, like me, belong to the pre baby-boom generation. By paying close attention to the underlying message hidden behind all the cynicism, mistrust and dismay that characterizes these conversations, I've come to the conclusion that what people are really doing is lamenting leadership lost. By and large, we've come to view our political leaders and our political processes in a somewhat Rodney Dangerfieldesque way — they “don't get no respect.”

Thankfully, CDA's political leaders are bucking the trend that has gripped the country at large. They are perceived as honest, competent and successful politicians by their peers and, yes, they do get respect. As you read through this *Annual Review*, I think you'll see why. It's an impressive report card. The systems and programs in place at CDA have produced lasting results, including a comprehensive planning system rooted in our mission statement, goals and objectives; a prudent approach to drafting budgets and monitoring expenditures; and an en-

hanced package of member benefits and services.

But there is more to success than just systems and programs. It's people that make it happen — people that make it all work. And you just know that when people, systems and programs are all working well, and all working in unison, the democratic political leadership is doing its job of governance in a way that earns respect and loyalty. That's certainly the case at CDA.

In fairness, one has to concede that there is a difference in scale of several orders of magnitude between the job list confronting government

leaders in Canada versus the items on CDA's political agenda. But the fact that a job is large and daunting does not justify the belief that leadership failure is inevitable or even acceptable. Nor should it be taken for granted that it is easy to achieve good results when the job is smaller in scale, because the principles of leadership being tested are the same.

It's no easier or harder for CDA to discipline its financial operations than it is for the federal government, a large corporation, or even the family member responsible for the household budget. Size isn't the issue. What counts is an understanding of the economic reality and a commitment to a balanced, realistic financial plan. It's what separates the true leaders from the pretenders. No matter how big or small, if the principle of leadership inherent in effective financial management is lost, the organization is not only in trouble, but is also seen to be in trouble. It's leadership loses respect.

Success depends on seeing the approaching storm clouds early, and then standing firmly behind the leadership principle before, during and after the tempest. If its leadership is sound, then the organization will weather the storm, turn things around, and be well prepared for the future. This is the baseline position of CDA, as described in this *Annual Review*.

We need to build on this base, as CDA prepares for a future that threatens increased government and

third-party intrusion into the affairs of the profession. This past year saw us beat back a federal government tax grab on employer-paid dental plan premiums. But we know this issue will be back on the table in the coming budget considerations, and that the federal government is also looking at reduced limits on RRSP contributions and GST revisions. We have to do an ongoing, effective job of publicly making a strong case against these ill-considered tax proposals.

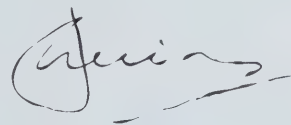
And at the same time that CDA's leadership is dealing with external threats, it must also ensure that the association's internal organization and structure are finely tuned, and that CDA is ready to meet the challenges of the approaching second century in its life. None of this is easy, and all of it is precarious. But past performance, as evidenced in these pages, bodes well for the future.

CDA's democratic institutions and processes may not be perfect or even near-perfect models. They work because the people who get involved in them are dedicated to their tasks. CDA's board members, its executive council, management committee and the hundreds of volunteer committee members all *believe in* what they are doing.

They use the institutions and processes in place at CDA today to do the best job they can of serving their professional colleagues who are members of CDA. They also advance the interests of non-members, because you can't serve the CDA cause without

benefitting the cause of dentistry at large in Canada. The expression in economic and political circles goes: "a rising tide lifts all boats." Everyone knows, deep down, that this isn't fair play. But it's the way things are. And those who contribute to making CDA the vital, effective organization it is don't have the time or the inclination to mope about the thankless disregard demonstrated by those who choose not to contribute in any fashion — not even through payment of membership dues. The doers are just too busy and too focused on their own bundle of tasks within the CDA mission.

For someone in my role, this makes for an inspiring and invigorating work environment. I can't thank them enough. Take heart, Rodney, respect is alive and flourishing for this community of leaders. Pass it on.



Jardine Neilson, BA, MSW,
CAE
Executive Director



ADVICE AND INFLUENCE

***T**he highlight of 1993-94 occurred February 22, when it became clear that CDA and its partners had won the first round in dentistry's ongoing campaign against the introduction of a new federal tax on employer-paid dental plan premiums. This victory was further sweetened by the success of CDA's lobby against planned reductions in the annual RRSP contribution limit for self-employed individuals. Also of note this year was the settlement reached between CDA and the Quebec Dental Surgeons' Association (QDSA) to end a 10-year disagreement concerning the use of the surplus funds generated by the Canadian Dentists' Insurance Program (CDIP) between 1977 and 1985. The settlement marked the beginning of a rapprochement between the two organizations, and, hopefully, the start of a new era of cooperation.*

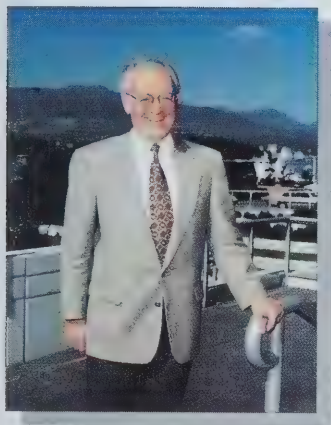
Government Relations

Tax On Employer-Paid Dental Plan Premiums

Finance Minister Paul Martin's plans to tax employer-paid dental plan premiums became public in January 1994. CDA, working closely with its

corporate members, took immediate, effective action. Within two weeks, Dr. Robert Hicks, CDA's taxation committee chairman, had put together a comprehensive brief outlining the negative impact of the tax on the oral health of Canadians. Within three weeks, CDA president Dr. Raymond Wenn had submitted the brief to Mr. Martin, Health Minister Diane Mar-

leau and the opposition leaders, and enlisted the support of Canadian dentists. Dentists were asked to contact both the finance minister and their local MP to state their personal opposition to any tax on employer-paid dental plan premiums, and to encourage their patients to take similar action. The campaign culminated in February, when CDA and the Ontario Dental Association



**Dr. Robert Hicks, Chairman
of CDA's taxation committee.**

(ODA) joined forces to initiate an advertising campaign. An open letter alerting Canadians to the implications of the planned tax and asking them to contact their local MP was placed in both the *Globe and Mail* and the *Toronto Star*.

Mr. Martin ultimately backed away from his plans to tax employer-paid dental plan premiums, and stated publicly that the issue should be referred to Prime Minister Jean Chrétien's promised National Forum on Health. CDA is in full agreement with this proposal, and is actively promoting it.

Subsequently, however, it became clear that Mr. Martin has reconsidered his position, and may impose a dental premium tax when he brings down his 1995 budget next winter.

Round two in CDA's tax campaign began in July, when Dr. Wenn sent a letter to all Canadian dentists to alert them to the renewal of the tax battle, and once again enlist the support of both dentists and their patients. The cam-

paign will intensify this fall, when CDA launches a full-scale media blitz to inform the public about the tax and its implications.

A tax on employer-paid dental plan premiums could increase the annual tax burden of the average Canadian family by as much as \$200 to \$1,100. Based on the Quebec experience, it is likely that many Canadians may choose to opt out of their employer-paid dental plans to avoid the additional tax load. Furthermore, statistics indicate that Canadians with dental insurance coverage are much more likely to visit the dentist than those with no coverage. If Mr. Martin follows through with his plans to tax health, the result will be a decline in the overall oral health of Canadians, and possibly in Canada's worldclass oral health delivery system.

Policy On Publicly Funded Dental Plans

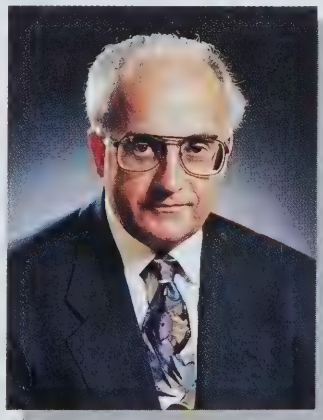
Following the success of its initial campaign against the taxation of employer-paid dental plan premiums, CDA formally implemented a new policy on the need for publicly-funded dental plans. Approved by the board of governors in April 1994, it states that:

The Canadian Dental Association believes that a combination of public and private funding is required to meet the dental health care needs of the Canadian public. To this end, it supports the following principles:

- ! The Canadian Dental Association strongly opposes the introduction of taxes on third party dental plan benefits as a counter-productive measure which would adversely impact access to dental health care services for the majority of Canadians.
- ! The Canadian Dental Association supports public funding exclusively for individuals or groups with specific needs as distinct from universal dental care programs. Publicly funded programs should be directed to the needs of those requiring special consideration or support to facilitate their access to dental health care.

RRSP Contribution Limits For Self-Employed Canadians

CDA's RRSP campaign began in late December, when it became clear that Mr. Mar-



**Dr. Raymond Wenn,
President of CDA.**

tin's 1994 budget plans included cutting the RRSP contribution limits for self-employed Canadians to \$8,500. This would effectively reverse the victory that the association and its partners won in 1993, when the federal government agreed to increase contribution limits to \$13,500 in 1994, \$14,500 in 1995 and \$15,500 in 1996.

By the first week in January, Dr. Hicks had drafted a hard-hitting brief stating CDA's position on the RRSP issue. Dr. Wenn promptly forwarded the brief to Mr. Martin and opposition party leaders. He also contacted Canadian dentists, urging them to inform the finance minister and their local MPs of their strong opposition to any cut in RRSP contribution limits.

The campaign was a success. Mr. Martin ultimately put his plans on hold, and said that the question of RRSP contribution limits would be debated in the fall as part of a broad review of both public and private pension systems. CDA will monitor and participate in the review process.

CDA has led the fight to increase annual RRSP contribution limits since 1982, when the association initiated and chaired a Joint Professional Committee to promote tax reform in the RRSP area. The association believes that Canada's system of tax-assisted retirement savings should be equitable for employees, people without access to a company-sup-

ported pension plan, and the self-employed — including dentists.

Goods and Services Tax

Throughout 1994, CDA monitored the Finance Committee hearings on the replacement of the Goods and Services Tax (GST). Dr. Hicks has reviewed the committee's recommendations, and will keep CDA's leaders abreast of any areas of concern. There are indications that the government is considering a broadening of the tax base for the GST, which could increase the cost of dental care for many Canadians. CDA is considering appropriate action.

Corporate Relations

Settlement of Outstanding Issues With QDSA

CDA and QDSA overcame a 10-year impasse in June when the two sides reached an agreement to settle all outstanding differences with respect to the use of the surplus funds generated by the CDIP life and disability plans between 1977 and 1985.

The impasse began in 1984, when QDSA took the position that the surplus funds should be distributed

to the plan participants who had actually contributed to them. CDA and the other nine corporate members disagreed, as they believed that the surplus funds should be used to enhance the plans, thereby providing a general benefit to all CDIP participants.

To settle the issue, CDA ultimately sought a judicial determination of the broader issues relating to the use of CDIP surplus funds. Late in 1992 the Ontario Court of Justice (Commercial Court) ruled that CDA's executive council had allowed the CDIP surplus funds generated between 1977 and 1985 to be used in a manner that was inconsistent with its trust responsibilities, and ordered these funds to be distributed, on a pro-rata basis, to the thousands of plan participants who had contributed to them.

CDA, on the advice of its lawyers, appealed the decision to the Court of Appeal for Ontario. This spring the court set aside the disbursement order, and ruled that, with one small exception, executive council had allowed the surplus funds to be used in an appropriate manner.

The court's decision paved the way for the final settlement between CDA and QDSA. Effectively, the two sides have reached agreement on all outstanding issues relating to the CDIP surplus funds "once and for all time."

National Health

National Forum On Health

In January, the federal government announced that Prime Minister Jean Chrétien would chair a National Forum on Health. Dr. Wenn immediately wrote to Health Minister Diane Marleau to congratulate the government on its initiative, and to express CDA's interest in participating in the forum. CDA continues to monitor developments in this area, and will work with the National Forum Secretariat, established to coordinate preparations for the event, to ensure that dentistry's views are heard.

Plain Packaging Of Tobacco Products

In March, CDA wrote to provincial ministers of health to express its strong support for the plain packaging of tobacco products. CDA believes that plain packaging will provide a strong warning to Canadians about the dangers of smoking and its devastating effects on their oral and general health.

CDA has consistently supported tougher regulations on the sale, promotion and packaging of tobacco products. The association is an active member of the Canadian Council on Smoking and



**Canada's Parliament:
Prime Minister Jean Chrétien
has promised a National
Forum on Health.**

Health and a member of the Coalition For Action On Tobacco.

MSB Claim Form Changes

CDA met with representatives of Health Canada's Medical Services Branch (MSB) June 13 to discuss proposed changes to the Non-Insured Health Benefits (NIHB) program.

If implemented, the proposed changes to the program, particularly the requirement for mandatory tooth chart information, would substantially increase the administrative burden faced by participating dental offices.

CDA was also concerned about the legal liabilities that dentists may face as a result of MSB's unilateral decision to remove the patient signature block from the claim form. Following discussion, MSB

made a verbal commitment to reinsert the signature block, once its current supply of forms is exhausted.

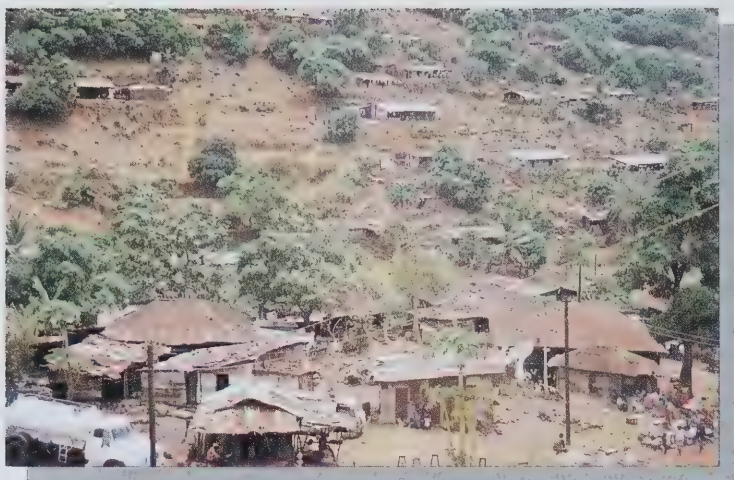
MSB also agreed to re-examine its policy and procedures with respect to bonded amalgam. Currently, claims submitted to the branch for bonded amalgam restorations are disallowed, because MSB does not accept bonded amalgam as an allowable dental procedure.

Now, however, the branch has agreed to use CDA's guidelines on the utilization of bonded amalgam as a resource, initially to judge the reasonableness of payment for simple amalgam fillings where a bonded amalgam cannot be approved, and ultimately to allow the inclusion of bonded amalgams in the approved schedule of dental services.

Information on the NIHB program and CDA's meeting with MSB was distributed to all Canadian dentists in July. CDA will meet with MSB again later this year in an attempt to resolve outstanding issues, as well as to supply the branch with provider feedback.

Family Violence

This year CDA was asked to review an Interdisciplinary Curriculum Guide of health professionals — produced by the Health Programs and Services Branch of Health Canada — on violence against woman and children and its implications for their families. Dr. Elizabeth MacSween, a member of CDA's govern-



**The town of Bo, Sierra Leone.
Modern dental equipment and dentists are in short supply.**

ment relations committee, undertook this project on behalf of the association.

International Dentistry

CIDA Initiatives

CDA was involved in two international dental initiatives in 1994.

With funding from the Canadian International Development Agency (CIDA), CDA provided management and administrative staff support to an innovative project to access the oral health education needs of Sierra Leone, and establish a formal dental linkage with the African nation's College of Medicine and Allied Health Science (COMAHS).

CDA provided similar support to a collaborative linkage project between organized dentistry in Egypt and Canada. This project will provide

annual dental examinations to school-age children in three Egyptian school districts, and promote dental awareness.

Mexican Visit

Two of Mexico's senior dental representatives visited CDA's Ottawa headquarters in June to gain firsthand knowledge of Canada's dental accreditation system. Dr. Eugenio Deister, academic

advisor and dean of the School of Dentistry, Intercontinental University, and Dr. Ernesto Acuña, director of international relations for the Mexican Dental Association, met with CDA officials and attended a meeting of CDA's council on education. Mexico is currently investigating the feasibility of establishing its own dental accreditation system.

Academy of General Dentistry

Officials from the Academy of General Dentistry and CDA met in Ottawa last October to discuss common concerns, including the need to entice new dental graduates to participate in organized dentistry. The two organizations are currently exploring the possibility of initiating joint programs in the area of membership retention and recruitment.



Mexican dentistry visits CDA (l to r): Dr. Ernesto Acuña, Mr. Jardine Neilson, Dr. Eugenio Deister, Dr. Patricia Sanchez.



**CDA president
Dr. Raymond Wenn (r)
meets with AGD president
Dr. Luke Matranga during
the AGD President's Ball.**

In July, Dr. Wenn was invited to speak at the AGD's annual meeting in Indianapolis.

Issues Management

Lobbyist Registration Act

Proposed changes to the Canadian Lobbyist Registration Act, which would narrow the distinction between tier one and tier two lobbyists by introducing stricter reporting requirements, could create a significant financial and administrative burden for non-profit associations such as CDA.

If the changes go through, CDA will have to work harder and spend more money to sustain an effective government relations program. CDA believes the special nature of non-profit associa-

tions, particularly those concerned with public health and safety, should be recognized in the Act, and that the government should respect the spirit of the Act's preamble, which states that "free and open access to government is an important matter to public interest."

CDA continues to lobby the government, and is working closely with other interested organizations, notably the Canadian Society of Association Executives, on this issue.

Planning And Issues Coordination Committee

CDA has established a new planning and issues coordination committee. Reporting to executive council, the committee will identify emerging and strategic issues, provide direction and guidance on policy formation, and act as a resource to the annual executive planning session.

In essence, the new committee will engage in long-range planning, with a mandate to review and revisit issues, including the feasibility of changing CDA's corporate structure. Members of the committee will be drawn from both executive council and the management committee. It will operate as an ad hoc committee for a two-year trial period, pending its review and permanent appointment by executive council.

Government Relations Dinner

The timing, topic, venue and choice of speaker for CDA's 1993 Government Relations Dinner couldn't have been better. It was held in Ottawa September 9, just one day after then Prime Minister Kim Campbell announced the date of the next federal election. The guest speaker was the Canadian Television Network's Ottawa bureau chief, Mr. Craig Oliver, who outlined the role of the media in election campaigns.



Mr. Craig Oliver.



INNOVATION

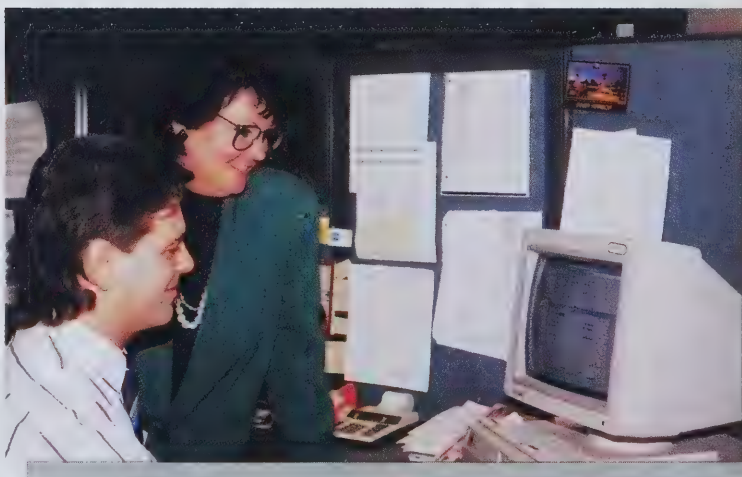
With the acquisition of its new iMIS Association Management System in April, CDA entered the age of the "information highway." Also of note in 1994 was the long-awaited release of CDAnet Plus, a package of value-added services for the CDAnet system.

iMIS Association Management System

Purchased to replace CDA's Digital VAX-based membership system, iMIS will allow CDA to eliminate duplication in the accounting, membership and invoicing areas, as well as enhancing the association's ability to monitor and respond to the individual needs of members. Using the new package, which is designed to run through CDA's existing MS Windows software, various departments within CDA will be able to access and update the

membership data base on-line, as well as to transmit billing information to CDA's accounting department over the association's LAN network. A Fi-

nancial Services Interface will actually integrate CDA's LAN-based AccPac Accounting System with the membership data held in the iMIS system.



Membership Services Manager Carol Anne St. Laurent and Systems Manager Ralph Dowsing access CDA's membership data using the iMIS Association Management System.



The CDAnet booth at FDI 1994 was a popular stop for convention delegates.

CDA's iMIS system should be fully operational by January 1995. Nine management modules are currently being installed, including Membership, Dues Billing, Accounts Receivable, General Financial Interface, Committees, Subscriptions, Meetings and Events Management.

The PC LAN network, purchased in 1993 and currently running in both the accounting and membership departments, in conjunction with the iMIS system, will be extended to the CDA Library and the corporate affairs area in 1995. When this occurs, corporate affairs will have instant access to membership data for meeting management and reference purposes. Similarly, the Library will be able to access MEDLINE and In-Magic over the LAN network, as well as membership data.

CDAnet Plus

More than 20 CDAnet certified software vendors confirmed their intent to participate in CDAnet Plus in 1993-94, and will begin providing Canadian dentists a full range of value-added services this fall.

In addition to E-mail and bulletin board, dentists subscribing to CDAnet Plus will be able to take advantage of services such as credit card draft capture, access to telecheck verification and other financial services.

The CDAnet Plus system was developed in cooperation with the National Data Corporation of Canada (NDC).

CDAnet

Rapid growth in the CDAnet system is expected

this fall, when two of British Columbia's major insurance carriers come on board. CDA concluded a participation agreement with the Medical Services Association (MSA) and the CU & C Health Services Society in July. Both carriers expect to begin accepting claims electronically by mid-September.

Maritime Life Assurance Co. also joined CDAnet in 1993-94, and began accepting claims on real time as of November 16 last year. CDA looks forward to initiating future discussions and negotiations with the remaining Canadian not-for-profit carriers, such as Alberta Blue Cross, Atlantic Blue Cross, and Green Shield, to bring these companies on board CDAnet.

As of September 1, 2,856 dentists in 1,539 offices were processing claims over the CDAnet system.



PROFESSIONAL DEVELOPMENT

Continuing education was front and centre in 1993-94, as CDA's new practice management programs entered their first full year. CDA co-hosted a teaching conference on hospital dentistry, participated in a task force on dental education, and laid the plans for a new comprehensive periodontal care using PSR program.

Practice Management Seminars and Resource Materials

Surviving and Thriving In the '90s Lecture Series

Developed on CDA's behalf by Imtiaz Manji and Barry McNulty of Experient Consultants, with input from Cana-

dian Dental Service Plans Inc. (CDSPI), *Surviving and Thriving in the '90s* was offered in six locations: Ottawa, Toronto, Sudbury, Calgary, Edmonton and Vancouver.

The one-day seminar provides dentists with valuable information and insight on how to re-engineer their practices and personal life plans. Participants learn new, innovative strategies for patient care, transition management, life planning and team leadership.

This seminar will be offered across Canada in both French and English in 1994-95.

Getting Started In Dentistry: Your First Five Years Lecture Series

Getting Started in Dentistry: Your First Five Years grew out of CDA's Bridge To Practice Success seminar program, which was piloted in British Columbia last year. The new one-day seminar is geared toward fourth-year students, and is intended to provide new graduates with the information they need to succeed in dentistry.

Presented by Barry McNulty and Imtiaz Manji on behalf of



Mr. Imtiaz Manji.

CDA, with the help and support of CDSPI, *Getting Started In Dentistry: Your First Five Years* was offered at eight universities in 1993-94 — Western, Manitoba, Saskatchewan, Dalhousie, Alberta, U of T, British Columbia and McGill.

Dental Consumer Of the '90s

Back by popular demand for a second year, *Dental Consumer of the '90s* is designed to provide dentists with new insight into the needs and wants of today's dental patient. Participants learn how to maintain their current patient base, as well as how to attract both new and lapsed patients.

Dental Consumer of the '90s, developed by Mark Sarner of Manifest Communications on behalf of CDA, with financial support from Ash Temple, was offered in French in Montreal and Quebec City, and in English in London, Ont., Saskatoon, Montreal, and Edmonton.

Taking Care of Business Resource Binders and Cassettes

The most extensive practice management program ever undertaken by CDA, *Taking Care of Business* provides dentists with valuable resource materials to help them succeed at every stage of practice life.

Developed on CDA's behalf by Imtiaz Manji and Barry McNulty of Experdent Consultants, with input from CDSPI, the program currently consists of two strategy-packed course books — *Practice and Value Management* and *Associate and Transition Planning*.

Over 200 pages long, *Practice and Value Management* includes more than 40 work sheets and a six-cassette audio program. *Associate and Transition Planning* includes more than 300 fact-filled pages plus a six cassette audio program.

The third volume in the *Taking Care of Business* series, which will cover computers and office computerization, will be released this fall. Volumes I and II will also be available in French next spring.

Dental Care

Comprehensive Periodontal Care Using PSR Program

CDA, in conjunction with the Canadian Academy of Pe-

riodontology (CAP) and Procter and Gamble Canada Inc., has initiated discussions that could lead to the launch of a new comprehensive periodontal care using PSR program next year.

Consisting of a manual, recording forms and a specially-designed probe, the program would allow Canadian dentists to accurately assess the periodontal health status of their patients and analyze the results. If it goes ahead as planned, it will be modelled on a similar program that was introduced in the United States by the American Dental Association, the American Academy of Periodontology and Procter and Gamble in 1992. It is anticipated that the program will be launched in three stages: to periodontists and general practitioners in 1995, and to the public in 1996.

Dental Education

Task Force On Dental Education

CDA has agreed to work with the Association of Canadian Faculties of Dentistry (ACFD) to form a task force "to review needs and new direction for dental education in Canada." The task force will study various models of dental education, as well as discuss dentistry's relationship to the broader health care system in Canada. It comes in response to the growing

threat that Canadian faculties of dentistry may be closed down and are facing substantial funding cutbacks.

Hospital Internships

CDA's Commission on Accreditation has developed a proposal for the introduction of a national certificate of recognition program for dental internships, which has been reviewed by CDA's council on education. The proposal comes in response to the Ontario government's recent decision to eliminate funding for dental internships. It has now been referred to the documentation committee of the Commission on Dental Accreditation of Canada for editing.

In addition, CDA's board of governors has passed a resolution expressing the association's strong support for "the establishment and continuation of dental hospital internships in Canada as an important service for the public and an excellent educational vehicle."

Teaching Conference

CDA's 37th annual teaching conference, held in October 1993, focussed on hospital dentistry. The two-day conference discussed the threat of further cuts in dental internship funding by government, as well as how ongoing financial constraints are affecting hospital dental services across Canada.



Dr. Gordon Thompson, the chairman of the council on education.

It was sponsored by the Dentistry Canada Fund (formerly the Canadian Fund For Dental Education).

Manpower

Dental Care Occupations Labor Market Model

CDA has committed \$10,000 to a national supply and demand study on the need for dentists, dental hygienists and dental assistants in Canada. Although the final plans for the dental care occupations labour market model study are still being worked out, it is anticipated that the project will move ahead in 1995. The federal government, the Canadian Dental Hygienists Association and the Canadian Dental Assistants Association, as well as other dental organizations, have all committed funding to the project.

Development

Dentistry Canada Fund

CDA's new Dentistry Canada Fund was officially launched in 1994, with the appointment of provisional directors to the DCF board. The appointment paved the way for DCF to develop bylaws and objectives, which were approved by the CDA board in April. Supplementary Letters Patent in support of DCF's objectives were issued by the Ministry of Industry and Science Canada (Canada Corporations Act) May 3. Also of note in 1993-94 was the hiring of Mr. James Wegg as Manager DCF. Mr. Wegg replaces Mrs. Julie Hentschel, who left DCF in 1994 to pursue other interests.



Mr. James Wegg, Manager DCF.



PROFESSIONAL STANDARDS

***I**n an effort to promote and maintain uniform standards of dental care across Canada, CDA created an ad hoc committee on clinical guidelines/standards of care in 1993-94. The year also saw the release of CDA's new Workbook On Infection Control, the development of new guidelines on the use of latex in dentistry, and the inclusion of new product lines in CDA's Seal of Recognition program.*

Standards of Care In Dentistry

With the support of provincial licensing bodies across Canada, in 1993-94 CDA created an ad hoc committee on clinical guidelines/standards of care. The intent of the new committee will be to "suggest common approaches, philosophies, structures and terminology that may assist licensing authorities in each of the provinces to develop individual positions (with respect to clinical guidelines/standards of care),

which will be harmonious and consistent with those of other provincial licensing jurisdictions." CDA believes that it is important, to the degree possible, to maintain uniformity in standards of dental care in Canada.

Latex Guidelines

In a cooperative effort with the Health Protection Branch of Health Canada, CDA has developed and approved new guidelines on the use of latex in dentistry.

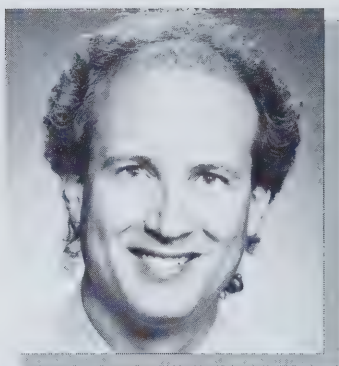
The guidelines state that:

Latex is most commonly used in dentistry in latex gloves and rubber dams.

- 1 Dental patients should be asked if they have allergies. If they do, ask them if they have ever had a reaction to a balloon or rubber gloves.
- 2 Use non-latex products on patients who say they have reacted to rubber or latex products. Special attention should be given to patients at increased risk to chronic latex exposure including spina bifida patients, paraplegics

and quadraplegics. Medical non-latex gloves are available in vinyl and hydrocarbon polymer. Consult product labelling.

- 3 Following latex exposure, if a dental worker shows skin problems, the worker should be tested for latex allergy by a medically-qualified allergist.



Dr. Trey Petty.

CDA Workbook On Infection Control

After careful review and consultation, the *CDA Workbook On Infection Control: A Companion to the CDA Guidelines on Infection Control* has received final approval from CDA's board of governors.

The workbook is intended to serve as a companion to CDA's guidelines on infection control and does not constitute a policy of CDA or define a standard of practice. It is designed to be a resource and reference that dentists or their staff can use to monitor and record infection control procedures. As such, it is pub-

lished in a convenient loose-leaf format to allow easy updating and information retrieval.

Now available free-of-charge to CDA members, the workbook was developed for CDA by Dr. Trey Petty in cooperation with the committee on community and institutional dentistry.

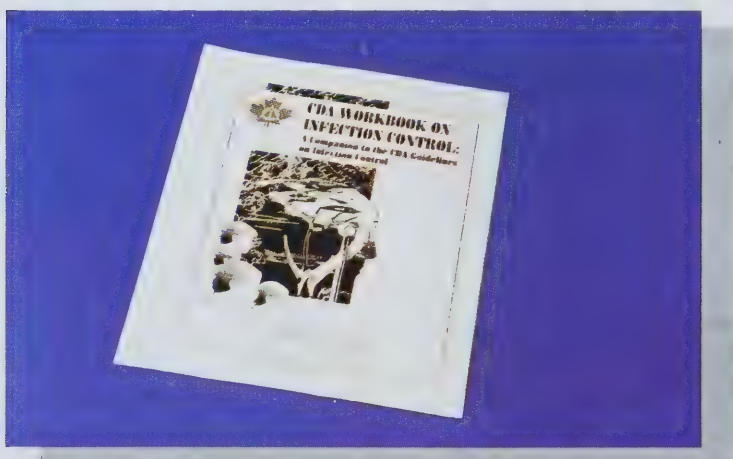
Tooth Whiteners

CDA has provided Health Canada's Health Protection Branch (HPB) with its scientific position on tooth whiteners and related topics. Under

the terms of a process of interaction reached between HPB and CDA's committee on consumer products recognition, the branch will now be asked to describe its understanding of the effect of tooth whiteners on tooth structure and other oral tissues. Tooth whiteners are currently classified as cosmetics in Canada. CDA believes that they should be classified as drugs and regulated accordingly.

Seal Of Recognition

CDA's consumer product recognition program was broadened this year to include two separate categories for gingivitis control products. Products that have a proven level of effectiveness within a range of 0.76 to 1.0 on the gingival index (GI) are now eligible for Silver Seal recognition. Those with a proven level of effectiveness of 0.75 or less on the GI are eligible for Gold Seal recognition. The other change in the program concerns the product recognition statement. Gingivitis control products recognized under the Silver Seal program may now bear the statement: "This product helps to reduce gingivitis due to plaque above the gumline when used in a conscientiously applied program of oral hygiene and regular professional care." The statement for products recognized under the Gold Seal program is unchanged: "This product contains (ingredients) and helps to control gingivitis above the gumline when used



CDA's new Workbook on Infection Control.

program of oral hygiene and regular professional care.”

Committee On Consumer Products Recognition

The terms of reference of CDA’s committee on consumer products recognition were updated this year to allow the committee to assess and recognize therapeutic products. Under its new terms of reference, the committee will now:

- a) Advise on CDA’s Seal Of Recognition Program;
- b) Advise on questions concerning the safety, efficacy or utility of new oral health care products;
- c) Advise on therapeutic claims in journal and medical advertising;
- d) Propose categories for recognition of products marketed to consumers or dental professionals demonstrating diagnostic, preventive or therapeutic benefits in oral health care, examination or treatment;
- e) Develop criteria for recognition of products within approved categories;
- f) Develop guidelines for applicants and accept and process applications for recognition of products within approved categories.

Dental Unit Waterlines

CDA’s committee on community and institutional dentistry is monitoring a research

project initiated by the American Dental Association, U.S. Centers For Disease Control, and dental unit manufacturers on the bacterial contamination of dental unit waterlines. Once the committee has reviewed the final report on this project, it will recommend appropriate modifications to CDA’s recommended infection control procedures for dental unit waterlines, if necessary. CDA currently recommends flushing the waterline before re-attaching the sterilized hand-piece.





COMMUNICATIONS

*Although it's too early to predict the final outcome, CDA's ongoing campaign to preserve and protect the integrity of third-party dental plans may be the most important communication's initiative ever undertaken by the association. But 1993-94 was also a year of re-evaluation and re-assessment, with the development of comprehensive mission statements for both *Communiqué* and the *Journal*, as well as a change in direction for the Dental Awareness Program.*

Journal and Communiqué

Improvements were made to both *Communiqué* and the *Journal* in 1993-94, as CDA continued its efforts to enhance the value of both publications. *Communiqué* was given a new typeface, a new focus and a revitalized design. The other highlight occurred when CDA and Canadian Dental Service Plans Inc. (CDSPI) concluded a unique and mutually beneficial sponsorship arrangement. Under the terms of the agreement, CDSPI became the exclusive external

advertiser in *Communiqué*, and will place two paid advertisements in each issue of the newsletter. The sponsorship agreement allowed CDA to publish its members-only *Communiqué* on a regular six-times-a-year schedule in 1994.

The *Journal* also underwent some minor design improvements this year, but the biggest change was in the magazine's content. Beginning with the March 1994 issue on practice management, each edition of the *Journal* was dedicated to a specific dental theme. There was also a change in the overall focus of the magazine, with an

increased emphasis on clinical articles and case studies.

CDA developed specific mission statements, goals and objectives for *Communiqué* and



**Dr. P. Ralph Crawford, editor
of the *Journal* and *Communiqué*.**



Both the *Journal* and *Communique* were redesigned in 1993-94.

the *Journal* this year to ensure that both publications continue to meet the needs of the dental profession and CDA members. A comprehensive readership survey, currently in the planning stages, will be conducted this fall. Based on the results of the survey, further changes to *Communique* and the *Journal* will be implemented in early 1995.

Taxation Of Employer-Paid Dental Plan Premiums

In March 1994, it became clear that Finance Minister Paul Martin was still interested in taxing employer-paid dental plan premiums. CDA's communication's team responded by formulating a comprehensive communications and lobbying strategy against this tax. The strategy was approved by CDA's executive council in June and is now in the implementation stage. (For more information on CDA's taxation campaign, please see *Advice and Influence*.)

New DIS Pamphlets Released

Six new single-topic pamphlets were added to CDA's Dental Information System this year. Available at a special price to CDA members, and designed to provide accurate, easy-to-read dental information to patients, the pamphlets are titled: *Root Canal*, *Care After Minor Oral Surgery*, *Crown and Bridge*, *Orthodontics*, *Cosmetic Dentistry*, and *TMD*. They are intended to complement the original eight DIS

booklets, which are still available. This patient education initiative was sponsored by Colgate Palmolive.

Advertising and Publishing Standards

To ensure that the corporate image CDA portrays to its various publics is consistent and constant, the association will implement comprehensive advertising and publications guidelines in 1995. Currently under development, the guidelines will apply to all CDA product and promotional advertising, as well as to all CDA publications.

Guidelines and Position Statements

CDA has assembled its guidelines, policies and position statements on advertising, amalgam, infection control, fluoride, antibiotic pro-



CDA released six new DIS pamphlets in 1993-94.

phylaxis and bacterial endocarditis, denture labelling, denture mechanics, general anesthesia, and more, into a single, standardized package that is now available free-of-charge to members of the association. The package also includes CDA's mission statement and goals.

Dental Awareness Program

CDA's communications and membership committee has initiated a comprehensive review of the Dental Awareness Program (DAP). A great suc-

cess when it was launched 10 years ago, the need for a national program has shifted as CDA's corporate members have assumed more and more responsibility for dental awareness activities. Nevertheless, CDA continued its egg-speriment prevention campaign in 1994, in addition to developing six new Dental Information System pamphlets (see above). CDA was also active in promoting the International Year of the Family and The Year of Oral Health. The association created a special promotional T-shirt featuring CDA's "Bob" oral health mascot and his extended family, which was

made available to dentists and their staff.

Media and Public Relations

CDA's information services team responded to over 3,000 public and media requests for information in 1993-94. Areas of particular concern for both the public and the media included the taxation of employer-paid dental plan premiums, infection control and fluoride. Following media calls to CDA, articles on the taxation of dental plan premiums and CDA's campaign against the tax appeared in several major newspapers, including the *Globe and Mail*. The association also responded to media enquiries about Chlorzoin, the awarding of CDA's seal of recognition to Trident Sugarless Gum, and the safety of amalgam.

As part of its mandate to promote optimal oral health for Canadians, CDA expressed strong opposition to a number of products, misleading advertisements and media reports. In particular, CDA was concerned that a series of baby bottles featuring the logos of several popular soft drink brands could lead to increased bottle caries. The negative connotations of an advertisement suggesting that chewing gum could help patients to avoid the "buzzing" sound of the dentist's drill were also a cause for concern, as was an inaccurate, poorly researched *Saturday Night Magazine* article on the safety of dental amalgam.



CDA's Year of Oral Health, International Year of the Family T-shirt.



MEMBERSHIP

***T**he results of focus group sessions conducted in Quebec and Ontario may provide the key to improving CDA membership levels in both provinces, as well as to enhancing the association's existing programs and services to better meet member needs. Another vital factor in CDA's recruitment efforts this year will be a new membership campaign designed specifically to address issues of importance to Quebec dentists. Currently under development, the Quebec membership campaign will be launched this fall.*

In 1993-94, member programs were enhanced by the addition of an aggressive equity fund to the CDA RSP program, as well as by the development of several new products and services, including a series of Gentle Reminders office plaques.

Focus Groups

Focus groups were conducted with dentists from the Toronto area last winter in collaboration with the Ontario Dental Association (ODA). Based on the results of these sessions, CDA has perceived

a need to strengthen its corporate image among nonmembers, and to make them more aware of the programs and initiatives that the association undertakes on their behalf. Similar focus groups were conducted in four Quebec municipalities last spring. Final results from the Quebec sessions are expected shortly.

Canadian Dental Service Plans Inc. (CDSPI)

Programs administered by Canadian Dental Service Plans Inc. (CDSPI) on behalf of CDA

and nine of the association's corporate members continued to perform well in 1993-94.

Many plans in the Canadian Dentist's Insurance Program (CDIP) were enhanced this year. The dependent's life insurance plan, for example, saw the maximum coverage available for a spouse raised to \$500,000 from \$150,000, while the maximum coverage available under the accidental death and dismemberment plan was increased to \$500,000 from \$250,000. Similarly, a 60-day elimination period was added to the long-term disability plan, and the malpractice and the dentists' staff insur-



**CDSPI's management team (l to r):
Drs. James Wright, Rod Moran (president), and Gilles Dubé.**

ance packages were improved through increased limits or additional provisions.

In most cases, despite CDIP plan improvements, premium rates remained the same or even decreased in 1994. All basic life insurance premiums fell by eight per cent, while accidental death and dismemberment premiums dropped by more than 50 per cent.

The CDA Retirement Savings Program (RSP)

From June 1993 to the end of May 1994, assets in the CDA RSP program increased by nearly \$10 million, from approximately \$180 million to just over \$190 million, due to strong fund performance.

The highlight of the year occurred in February, when CDSPI launched the CDA aggressive equity fund. This higher-risk "small cap" fund specializes in the shares of emerging companies in promising areas of business, pro-

viding investors with strong potential for significant growth.

Altimira Management Ltd., a top performer in the industry, was selected by CDA to manage both the new aggressive equity fund and the existing common stock fund.

Similarly, Knight, Bain, Seath and Holbrook Capital Management Inc., a leading pension fund manager, was brought on board to manage the balanced fund.

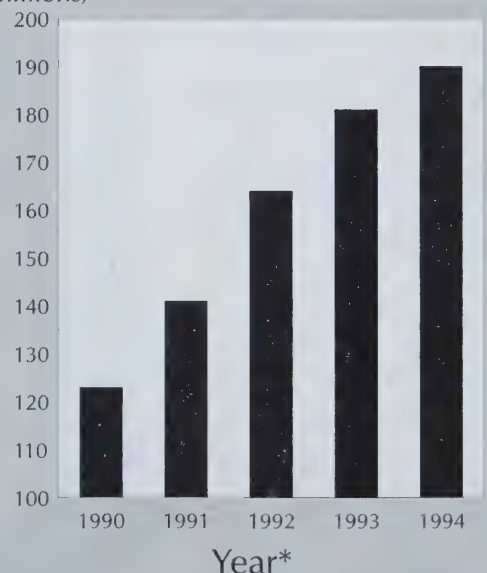
The CDARSP continues to have no start-up, closing or inter-fund transfer fees, and management fees remain extremely competitive at one per cent or less.

The CDA Registered Income Fund (RIF)

Launched in November 1993, the CDA RIF has quickly grown into a very popular program, with investments totalling more than \$1.4 million. This important new product allows retired dentists who close their RRSPs to continue amassing earnings from their retire-

CDA RSP Asset Growth

dollars (millions)



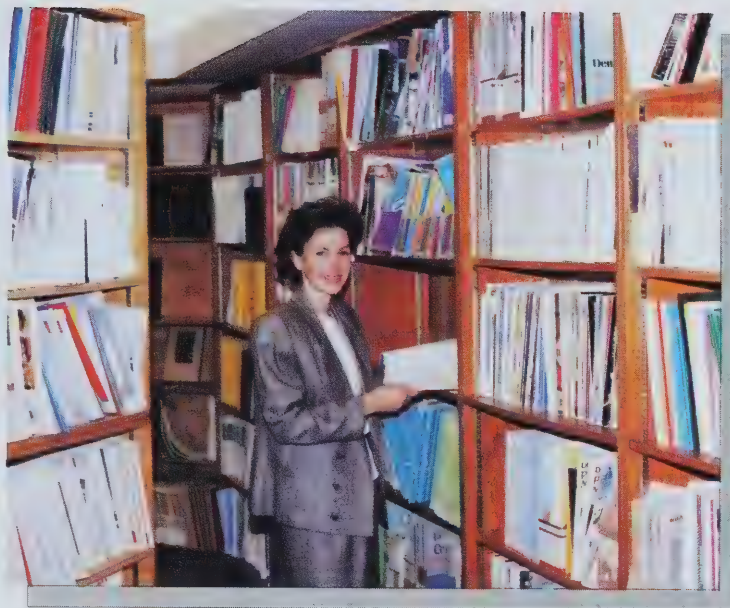
* as of May 31

ment savings, without removing them from a tax-sheltered environment, and still collect retirement income.

CDA RSP and RIF Eligibility

As of January 1, 1995, CDA will charge an annual \$50 eligibility fee to all qualified nonmembers who choose to participate in either the CDA RSP or CDA RIF. The fee, while nominal, will protect the integrity of the retirement investment programs as distinct benefits of membership in CDA.

Prior to January 1, 1995, the current eligibility requirements for the CDA RSP and CDA RIF will remain in effect. Eligible individuals already participating in the programs, as well as those who invest in them before the January 1, 1995, deadline, will not be required to meet any new or additional eligibility requirements after that date.



The CDA Library.

CDSPI Corporate Restructuring

CDSPI is currently investigating various options with respect to corporate restructuring. CDA, as a founding partner and co-owner of the CDIP program, has had input into this process, and will continue to work closely with CDSPI to bring it to a successful conclusion.

Gentle Reminder Office Plaques

CDA has developed a series of eight Gentle Reminders office plaques designed to alert patients to dental office procedures and promote dental health. The full-color plaques are available to CDA members only, in English and French.

Library

The CDA Library added seven journal titles to its serials collection in 1993-94, including *The International Journal of Prosthodontics* and *The Journal of Clinical Dentistry*. With the additions, the library now holds 245 titles on behalf of CDA members. Other services offered through the library include MEDLINE searches, a table of contents service, and a book and video lending service.



CDA's new Gentle Reminders office plaques.

A total of 3,470 MEDLINE searches were conducted for CDA members this year, using the library's new CD-ROM technology. Library packages continued to be popular as well. In the first six months of 1994 alone, 1,353 packages were provided to members on topics such as xerostomia, quality assurance, eating disorders and dental health, third molar extraction, and latex hypersensitivity. On the technological front, the library is currently exploring the use of the INTERNET system, which would allow library staff to access new medical and dental databases. It is anticipated that library services will be available to CDA members on-line, via the CDAnet *Plus* network, by 1995.

Membership Services Guide

In 1993 members were provided with a comprehensive guide of the services and programs offered by CDA. The Membership Services Guide also provided members with detailed information on CDA's committee and governance structure.

Grad Binder

Published annually, CDA's Grad Binder informs new graduates of the many services and programs available to them through membership in CDA, and explains how the association can help them in all

stages of their practice life. It is provided to all new graduates free of charge.

Membership Advantages

- ◆ **CDAnet** provides CDA members with access to no-cost on-line claims processing, with no transmission or transaction fees.
- ◆ **CDAnet *Plus*** provides Canadian dentists with E-mail plus a full-range of on-line financial and banking services, all in one convenient package, for a small monthly fee.
- ◆ **Payroll Management Services** are available at a reduced rate to CDA members, through a special agreement with TD Phone n' Pay.
- ◆ **Reduced Credit Card Merchant Rates** are available to CDA members from the Toronto Dominion Bank (VISA) and the Bank of Montreal (MasterCard).
- ◆ **CDA's Gold Affinity MasterCard** offers preferred pricing to CDA members on selected financial and other services.
- ◆ **CDA Leasing** provides CDA members with a full range of car leasing services at very competitive rates.
- ◆ **Travel Discounts** are available to CDA members through Thomas Cook Travel Agencies. In addition, CDA members can

take advantage of the special corporate rates offered by selected major hotels and Avis Car and Truck Rental.

- ◆ **CDA's Presse Commerce Service** makes it easy and affordable for CDA members to maintain an interesting selection of popular magazines in their reception area.
- ◆ Exclusive access to the University of British Columbia's **Sterilizer Monitoring Service** for CDA members.
- ◆ **CDA's *Management of Hazardous Wastes in the Dental Office*** manual is available to CDA members at a special members-only price.
- ◆ **Year of Oral Health T-shirt and Office Poster** featuring "Bob" and his international family, and designed exclusively for members, are available at a great price.
- ◆ A **free catalogue** of all CDA services and products is available from the CDA order desk. To get yours, call 1-800-267-6354.



Drs. Michel Jahjah, Raymond Wenn, Ron Markey, and Clive Ross officially open the exhibit hall at FDI 1994.

FDI 1994

***T**hey came, they saw, they learned. In October, CDA played host to the 82nd FDI World Dental Congress. Staged in Vancouver, the week-long event attracted dentists from around the world to Canada, all eager to learn more about Canadian dentistry. They came to see the wares of over 200 exhibitors occupying more than 600 booths on the trade show floor, and they came to participate in over 200 scientific lectures, a dozen hands-on courses, and five live television presentations. And they came to renew old ties, meet new acquaintances, and socialize with fellow dentists.*

FDI 1994 marked just the second time in CDA's 92-year history that Canada and Canadian dentistry have played host to the World Dental Congress. The event was a smashing success, surpassing CDA's 1993 dental meeting

in Toronto as the largest dental gathering ever held in Canada.

Much of the credit for making FDI 1994 so outstanding belongs to CDA's general chairman of conventions, Dr. Michel Jahjah, and his hard-

working organizing committee: Drs. Marcia Boyd, Robert Clarke, Ron Markey, Wayne Chou, Ted Ramage and James Stich. All of Canadian dentistry owes them a vote of thanks for a job well done.



Thousands of delegates took in more than 200 scientific lectures during FDI 1994.



Delegates to FDI 1994 could visit more than 600 booths on the trade show floor.



THE BOTTOM LINE

***W**hat a difference a year makes. In 1992, following two very difficult years, CDA took out a \$1.5-million first mortgage on its headquarters building. This money was needed to provide operating funds and cash flow for three specific purposes: to effectively launch the CDAnet program; to pay legal costs incurred as a result the CDIP surplus funds issue; and to ensure the success of FDI 1994.*

At the same time, CDA adopted a five-year plan to put its financial house in order and repay the mortgage.

Specifically, the objectives set out for CDA under the five-year plan were to:

- 1 Meet monthly interest and principal payments on the mortgage out of operating funds, amounting to approximately \$180,000 per year;
- 2 Realize annual operating surpluses sufficient to take advantage of the 10 per cent pay down option, allowing an additional \$150,000 per year payment on the mortgage principal;

- 3 Reassess the association's debt load at the end of the five-year term of the mortgage, with a view toward paying down an additional sum at that time; and

- 4 Build a reserve surplus of up to 50 per cent of annual operating expenses.

Clearly, the plan is working. In fiscal year 1993, CDA realized a surplus of \$852,326 in its general operations, on a budget of \$5,753,384. This surplus included three extraordinary items, however: the recovery of legal costs related to the CDIP issue (\$225,101); the recovery of

GST paid in previous years (\$72,290); and the transfer of overhead costs to the CDAnet program (\$130,000).

In effect, CDA's careful management of resources generated an actual operating surplus of \$424,935. As hoped, this allowed CDA to take advantage of the 10-per-cent pay-down option in its mortgage.

Much of the 1993 operating surplus was generated through increased revenue from membership fees and non-dues income. Fees were increased by 3.8 per cent in 1993 over 1992, and by an additional 3.7 per cent in 1994. With a modest

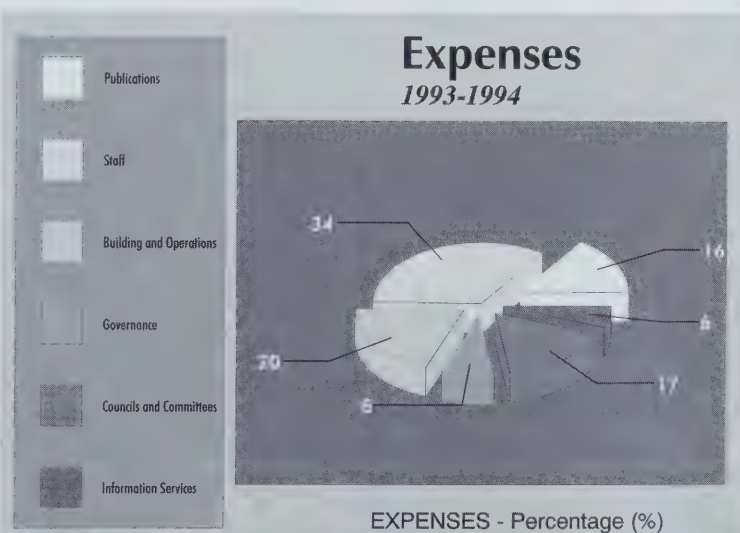
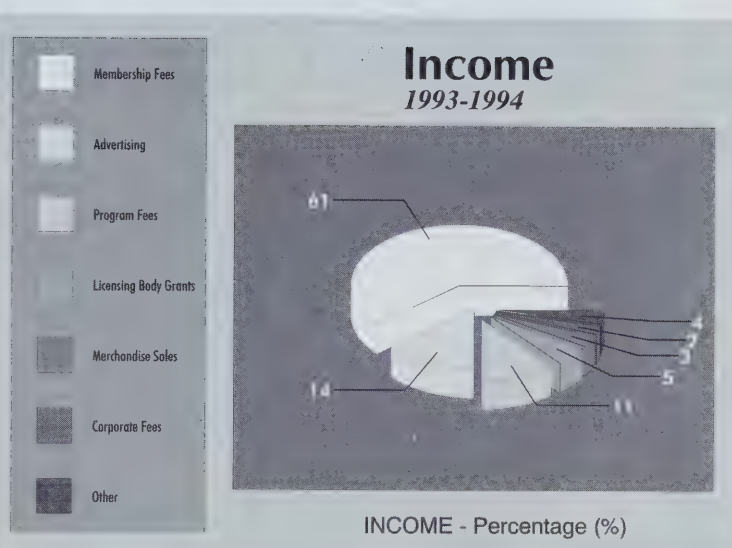
growth in the number of dentists joining CDA, however, the total income from fees was actually 4.1 per cent higher in 1993 than 1992.

Non-dues income was up by 3.5 per cent, largely as a result of revenue growth in three areas: Consumer Products Recognition (up 239 per cent); the Dental Aptitude Test program (up 18 per cent); and advertising income (up 14 per cent).

The other key factor in CDA's success in 1993 was cost control. Expenses were held at 1992 levels, despite the growth that occurred in a number of program areas.

CDA accounts for its Convention and CDAnet programs separately from its general operations. In 1993, the Convention generated a surplus of \$120,642. The CDAnet program, despite experiencing substantial revenue growth in 1993, incurred a deficit of \$162,075, including overhead charges of \$130,000 (noted above).

The bottom line, then, was a combined surplus of \$810,893, from total revenues of \$7,365,239 and total expenses of \$6,554,346.



While current estimates indicate that CDA will not duplicate 1993's results this

year, the association should end 1994 with a healthy operating surplus.



CDA's Executive Council.

GOVERNANCE

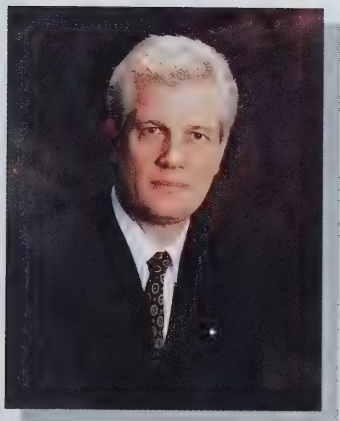
***T**his year, for the third time in recent CDA history, three qualified dentists entered the race to become CDA vice-president and earn a seat on the association's management committee: Drs. Bernie White of Saskatoon, Toby Gushue of St. John's, Nfld., and Barry Dolman of Montreal — the eventual winner. Other highlights in 1993-94 include the acclamation of Dr. Nicholas Mancini as chairman of the board for the 1994-95 term, and the awarding of honorary membership to Drs. Ralph Brooke and Ron J. Markey.*

Communications and Membership Committees Merged

The communications steering committee and the membership committee were merged to form a single committee in 1993-94. Chaired by Dr. James Brookfield of Kirk-

land Lake, Ontario, the new communications and membership committee will reduce the number of meetings required to formulate and implement recommendations on membership, and reduce duplication. It will also allow for more grass roots input. Three dentists as well as a recent

graduate will serve on the new committee, along with the executive council members for Ontario and Quebec, an executive council member from a mandatory province, and a fourth member of the executive council, who will chair the committee and serve a two-year term.



Dr. James Brookfield, the chairman of CDA's new communications and membership committee.

Corporate Fee Increase

CDA's board of governors approved a \$10 annual increase in the corporate membership fee in 1993-94. The increase reflects CDA's 1995 budgetary requirements, the financial goals established in its five-year plan, and its organizational structure.

Executive Services Department Renamed

To better reflect the organizational structure of CDA and the association's relationship with its corporate members, the executive services department was renamed in 1993-94. It is now called the department of corporate affairs.

Meeting With Specialty Sections

CDA's management committee met with leaders of Canada's dental specialties

sections October 1 in Vancouver. The annual meeting was initiated in 1992-93, and is intended to improve communications between CDA and the specialty groups at the decision-making level.

Awards

Drs. Ralph Brooke and Ron J. Markey were awarded honorary membership in CDA this year, the association's highest honor. Dr. Markey is a past-president of CDA as well as of the College of Dental Surgeons of British Columbia, and has been an active volunteer on behalf of organized dentistry. Dr. Brooke is dean of the faculty of dentistry at the University of Western Ontario. He is also the chair of the Commission on Dental Accreditation, the president of the Canadian Academy of Oral Medicine, and a past-president of the Association of Canadian Faculties of Dentistry.

Joining Drs. Markey and Brooke at the 1993-94 Awards Luncheon were Drs. Gordon Thompson and Roy Thordarson, who received CDA's Distinguished Service Award; Drs. Guy Maranda and Ian Vogan (the CDA Award of Merit); and Drs. Marco Chiarot, Blake Creaser, John Dillon, Keven Hockley, John McComb, Al LaBounty, Robert Murray, Colin Price, Richard Roydhouse, Robert Sandercock and William Sanders, and Ms. Marlene Paquin (Certificate of Merit).

Other winners were Mr. Michel Hart, the chairman of Ash Temple, who received CDA's Special Friend of Dentistry Award. Mr. Hart and Ash Temple are long-time supporters of Canada's dental profession and CDA. Last but not least in 1993-94, Christopher Soo, Michael Joseph Gillies, Denise Moison, Michel R. Gravel, Cristina Iaffrancesco, James Koehler, Marcel L. Van Woensel, J. Eric Selnes, Martin Lavallée and



Dr. Ralph Brooke (l) and Dr. Ron Markey (r) were awarded honorary membership in CDA this year.



Framed Photographs of CDA's past-presidents hang outside the Nicholas Mancini Boardroom at CDA's Ottawa headquarters, as well as plaques honoring all recipients of honorary membership in CDA, and the association's Distinguished Service Award.



CDA's 1993-94 management committee (l to r): Drs. James Brookfield (vice-president), Bryun Sigfstead (president-elect), and Raymond Wenn (president).



In recognition of his contribution as "dentistry's" chairman, a framed portrait of Dr. Nicholas Mancini now hangs in CDA's Nicholas Mancini Boardroom.

Tamara Jean Harach were named as CDA President's Award winners.

Distinction

To remember and recognize the contributions of CDA's past presidents and awards recipients, the association has created a special tribute. This year, framed photographs of every dentist to serve as president of CDA

were hung in the foyer to the Nicholas Mancini Boardroom, accompanied by plaques listing the names of every individual who has been awarded honorary membership in the association, or CDA's Distinguished Service Award.

Planning Session

CDA's strategic planning process continued to build on

the association's mission statement, goals and objectives this year. The purpose of the 1993 planning session was two fold: to determine the actual cost of CDA's objectives and goals, based on the specific activities and programs that CDA undertakes to accomplish them, and to review the final recommendations of CDA's Committee on Structure and Relationships.

BOARD, COMMITTEES, COMMISSION, COUNCILS AND STAFF

CDA BOARD OF GOVERNORS 1993-94

Dr. Nicholas A. Mancini	Chairman
Dr. Raymond Wenn.	President
Dr. Bryun Sigfstead	President-Elect
Dr. James R. Brookfield	Vice-President
Dr. John Diggins	British Columbia
Dr. Marke Pedersen	British Columbia
Dr. W. Donald Scramstad	British Columbia
Dr. Perry Trester	British Columbia
Dr. J. William Blair	Alberta
Dr. G. Phil Greeves	Alberta
Dr. Richard D. Sandilands	Alberta
Dr. Bernie E. White	Saskatchewan
Dr. Tom Breneman	Manitoba
Dr. Elizabeth MacSween/Dr. George Sweetnam	Ontario
Dr. Richard Bossin	Ontario
Dr. Roger Howard	Ontario
Dr. Peter Fendrich	Ontario
Dr. David Somer	Ontario
Dr. Oleg Kopytov	Quebec Affiliate
Dr. Micheline Blain/ Dr. Barry Dolman	Quebec
Dr. Paul Castonguay	New Brunswick
Dr. A.L. Burton Conrod	Nova Scotia
Dr. Colin Jack	Prince Edward Island
Dr. Toby Gushue	Newfoundland
Mr. Kevin Davis/ Mr. Cory Sul	Student Representative
Brig.-Gen. Victor Landis	Canadian Forces Dental Services
Dr. Julian Tsafaroff	Veterans Affairs Canada
(vacant — to be named)	Health Canada

CDA COUNCILS, COMMITTEES AND COMMISSION CHAIRMEN 1993-94

Executive Council	Dr. Raymond Wenn
Management	Dr. Raymond Wenn

Committees

CDAnet	Dr. Bernard Dolansky
Communications Steering	Dr. James R. Brookfield
Community and Institutional Dentistry	Dr. Wayne Steggles
Consumer Products Recognition	Dr. Michael Eggert
Conventions	Dr. Michel Jahjah
Dental Materials and Devices	Dr. Derek Jones
Ethics	Col. Morley Deyette
Government Relations	Dr. James R. Brookfield
Nominations and Awards	Dr. James R. Brookfield
Student Affairs	Mr. Greg Mitton
Taxation	Dr. Robert Hicks
Third Party Dental Plans	Dr. Luc Dugal

Commission

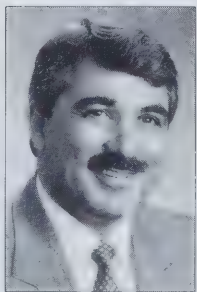
Dental Accreditation of Canada	Dr. Ralph Brooke
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Councils

Constitution and Bylaws	Dr. Mac Balfour
Education	Dr. Gordon Thompson
Insurance and Investment	Dr. Rod Moran

CDA MANAGEMENT AND PROGRAM STAFF

Mr. Jardine Neilson	Executive Director
Mrs. Sandra Davis	Manager, Corporate Affairs
Mr. Joel Neal	Director, Administration
Miss Linda Teteruck	Director, Communications
Dr. Ralph Crawford	Editor, <i>Journal</i>
Mr. Brian Henderson	Director, Education, Accreditation and Professional Services
Ms. Susan Matheson	Associate Director, Education and Accreditation



Dr. John Diggins, B.C.



Dr. Richard Sandilands, Alta.



Dr. Bernie White, Sask. and Man.

CDA EXECUTIVE COUNCIL 1993 - 1994

Management and Executive Director



Dr. Raymond Wenn,
president



Dr. Bryun Sigfstead,
president-elect



Dr. James R. Brookfield,
vice-president



Mr. Jardine Neilson,
executive director



Dr. Barry Dolman, Que.



Dr. Toby Gushue, Nfld.

CDA MISSION STATEMENT

The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada, dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

CDA GOALS

To develop and maintain an effective national communication strategy and programs to communicate with CDA publics and stakeholders on all matters under the mandate of CDA.

To ensure that the association is able to identify and position itself on all subjects critical to dentistry which are of importance to its members.

To develop positions, policies and programs which will provide optimal, accessible oral health care for Canadians.

To develop programs, standards and services at the national level which will enrich the profession and the personal life and character of its members.

To provide a national forum which facilitates the exchange of ideas on, and the development of, unified positions and standards on issues of interest to dentistry.

To ensure that the association has the necessary resources to effectively manage all programs necessary to fulfil its mandate.



CDA headquarters in Ottawa.



5442

7 DAYS

THIS BOOK MAY BE KEPT FOR
7 DAYS ONLY
IT CANNOT BE RENEWED

JUN 11 2007
MAR 5 1996
MAY 24 1996
JUL 12 1996
SEP 13 1996
NOV 21 1996
JAN 28 1997
OCT 13 1998
NOV 15 1999
JAN 25 2000
DEC 10 2003
JUL 29 2004
DEC - 5 2005
JUN - 8 2007

Canadian Dental Association.J
v.60(7-12) 1994

CANADIAN DENTAL ASSOCIATION v.60(7-12) 1994	
TODAY'S DATE	
Oct 5/95	
Feb 27/96	gone to be
May 17/96	lost (over)
July 5/96	TH
Aug 5/96	overnight

2704

